Assessing the prevalence of use and perceptions of university students in New Zealand on vaping, cigarette smoking, and the Smokefree 2025 goal.

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M.D., MPH.

A thesis submitted for the Degree of Doctor of Philosophy

at the University of Canterbury *Te Whare Wānanga o Waitaha,*

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Co-supervisors: Professors Ann Richardson and Randolph Grace

Dedicated to the memory of my beloved grandmother
Merab Nasipwondi Musumba
(1930 – 2019)

Acknowledgements

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Abstract

Background

Smoking is a leading cause of preventable death and disability with approximately 5,000 people killed annually in New Zealand and 7 million deaths annually worldwide attributable to smoking. Smoking is also a major contributor to inequalities in health and wellbeing between Māori and non-Māori in New Zealand. Furthermore, smoking exerts a heavy burden on the economy from lost productivity due to sickness and death, and health care costs to treat smoking-related illnesses, which are often chronic. For these reasons, tobacco control has been at the forefront of social and health policy in New Zealand over the past decade.

In March 2011, the New Zealand Government adopted the Smokefree Aotearoa 2025 goal (Smokefree goal) in response to the recommendations of a landmark Parliamentary inquiry by the Māori Affairs Select Committee into the consequences of tobacco use for Māori. The Smokefree goal aims to reduce the smoking prevalence to 5% or less by the year 2025. The three main pillars of the Smokefree goal include: protecting children from exposure to tobacco marketing and promotion; reducing the supply of, and demand for tobacco; and providing the best possible support for quitting smoking.

Vaping, the act of using an electronic cigarette (also called an e-cigarette), is a relatively new behaviour that has become increasingly popular across the world, particularly among smokers and young people. The majority of vapers are smokers who cannot or do not want to quit smoking, and the rapid success of e-cigarettes appears in large part to be related to their close resemblance to smoking in the behavioural aspect of use (i.e. vaping), reduced harm (vaping does not involve actual tobacco or the combustion process) and their low cost compared with traditional cigarettes. Increasingly evidence suggests that vaping can help people to reduce cigarette smoking or to quit smoking, to relieve the withdrawal symptoms of tobacco, and to continue having a “smoking” experience, but with significantly reduced health risks. For these reasons, the New Zealand Ministry of Health has been supportive of vaping as part of a smoking cessation process. However, until recently (27 March 2018), it was illegal to sell e-cigarettes containing nicotine in New Zealand but people could import up to a three-month supply for personal use.

Before this project, literature was lacking on smoking and vaping patterns of tertiary students (university, institutes of technology and polytechnics, and wānanga) in New Zealand and students' awareness of, support for, and perceptions about the Smokefree 2025 goal.

Objectives

This study sought to: (i) estimate the prevalence and patterns of smoking among university students in New Zealand when it was illegal to buy or sell e-cigarettes containing nicotine (i.e. time point 1 or T1) and after "policy change" that allowed people to buy or sell e-cigarettes containing nicotine (i.e. time point 2 or T2); (ii) assess e-cigarette use behaviour, reasons for use, and perception of harm, compared with tobacco cigarettes among university students in New Zealand at T1 and T2; (iii) assess the awareness of, support for, and perceptions about the Smokefree 2025 goal among university students in New Zealand at T1 and T2, and (iv) compare the results of New Zealand university students (smoking and vaping) at T1 with results of Australian university students.

Methods

A quantitative descriptive cross-sectional approach was used for this research. Data collection for T1 in New Zealand took place between 01 March and 01 May 2018 and although people could legally buy or sell e-cigarettes containing nicotine in New Zealand from 27 March 2018 (following a Court ruling in *Philip Morris v Ministry of Health*), e-cigarettes containing nicotine were not immediately available. It took at least several weeks for large consignments of e-cigarettes containing nicotine to arrive in New Zealand.

Information on demographic characteristics of participants, smoking, vaping, thoughts and feelings during "the last month" and health in the previous 12 months was collected in both countries and information on the Smokefree 2025 goal was collected in New Zealand. Analysis in this thesis focused on the questions on smoking and vaping (both countries), the Smokefree 2025 goal (New Zealand), and associations between history of mental illness (HMI) with smoking and vaping (New Zealand). New Zealand responses were weighted to account for oversampling and undersampling based on gender and university size. Ethnicity responses were prioritised for Māori.

Descriptive statistical analysis of data was carried out using IBM SPSS Statistics version 25 and two-sided $p<0.05$ was considered statistically significant. The analysis included, but was not limited to, calculation of proportions, assessing associations between variables and groups, and some regression analyses. Main comparisons included by age (<25 years and ≥25 years), gender (male and female), ethnicity (Māori and non-Māori), smoking status (current smoker and non-smoker), vaping status (current vaper and non-vaper) and HMI (HMI vs no HMI).

Results

Cigarette smoking: Overall, at times T1 and T2 in the New Zealand sample, ever smoking (T1 49.9%, T2 48.5%), current smoking (T1 10.4%, T2 11.3%), daily smoking (T1 5.6%, 4.5%), and smoking prevalence were similar and the majority of smokers smoked 1-5 cigarettes/day (T1 64.2%, T2 70.0%), smoked their first cigarette >60 minutes after waking up (T1 69.7%, T2 67.1%), did not smoke in smokefree spaces (indoors T1 87.4%, T2 90.6%, outdoors T1 65.1%, T2 67.8%) and planned to quit smoking (T1 68.7%, T2 61.1%). Furthermore, males were significantly more likely than females to smoke (ever, current, daily) and older respondents were significantly more likely than younger respondents to report smoking the first cigarette within 60 minutes of waking up, and planning to quit smoking. Māori were significantly more likely than non-Māori to report ever smoking. In addition, the majority of respondents agreed or strongly agreed that "Being smokefree is part of New Zealand way of life" (T1 50.7%, T2 51.2%), that "The number of places allowed to sell cigarettes and tobacco should be reduced" (T1 68.7%, T2 68.3%), and that "Cigarettes should no longer be sold in New Zealand in 10 years" (T1 53.0%, T2 55.0%).

In the Australian sample, 43.5% of participants had ever smoked, 8.6% currently smoked and 5.0% smoked at least daily. As in the New Zealand sample, the majority of smokers smoked 1-5 cigarettes/day (61.9%), smoked their first cigarette >60 minutes after waking up (68.1%), did not smoke in smokefree spaces (indoors 98.3%, outdoors 83.5%), and planned to quit smoking (61.3%). Similarly, males were significantly more likely than females to smoke (ever, current, and daily) and older respondents were significantly more likely than younger respondents to report ever smoking, smoking at least daily, smoking >5 cigarettes/day, and smoking the first cigarette within 60 minutes of waking up. The majority of respondents agreed or strongly agreed with the statement "I prefer to be in a smokefree environment" (92.2%), that

"The number of places allowed to sell cigarettes and tobacco should be reduced" (82.1%) and that "Cigarettes should not be sold in Australia in 10 years" (75.9%).

E-cigarette use: In New Zealand, ever vaping (37.0% vs 45.6%), current vaping (6.5% vs 12.6%) and daily vaping (2.5% vs 5.1%) e-cigarette use were all significantly higher at T2, and more respondents reported not vaping in indoor smokefree spaces (79.6% vs 70.0%) or outdoor smokefree spaces (71.3% vs 63.0%) at T1 than T2. Vaping to quit smoking (6.2% vs 5.7%) or for curiosity (63.7% vs 63.8%) was similar at both time points, but vaping for enjoyment was higher at T2 than at T1 (T1 13.4% vs T2 16.3%). Prevalence estimates for use of nicotine-containing devices were similar (80.3% vs 80.3%). More respondents at T1 than at T2 perceived e-cigarettes to be less harmful than tobacco cigarettes (75.3% vs 71.7%); the response rates to this question were similar at T1 and T2 (70.4% vs 72.5%).

Younger participants were significantly more likely to report ever vaping and vaping out of curiosity, while older respondents were significantly more likely to report vaping to quit smoking. Males were significantly more likely than females to vape (ever, current, and daily) and to perceive that e-cigarettes were less harmful than tobacco cigarettes. Māori were significantly more likely than non-Māori to report ever use.

Furthermore, current smokers were significantly more likely than non-smokers to vape (ever, current, and daily), while non-smokers were significantly more likely to report not vaping in smokefree spaces, and to report curiosity as the primary reason for use. In addition, the majority of respondents in both surveys disagreed that "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed" (T1 74.2%, 73.1%) and that "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed" (T1 53.5%, 53.0%), but not with the statement "If someone vapes around me they are causing me harm because of second-hand vapour" (T1 30.6%, T2 33.4%).

In the Australian sample, 19.9% of respondents reported ever vaping, 1.8% current vaping and 0.7% daily vaping; 9.3% vaped daily for a month or more and 40.1% used nicotine-containing e-cigarettes. Of those who vaped, 91.5% reported not vaping in indoor smokefree spaces and 84.5% in outdoor smokefree spaces, 5.8% vaped to quit smoking, 8.8% for enjoyment and 71.2% vaped out of curiosity. Overall, 71.8% of respondents (regardless of e-cigarette use status) perceived e-cigarettes to be less harmful than tobacco cigarettes. Older participants were

significantly more likely to report vaping daily, vaping to quit and using nicotine-containing e-cigarettes than younger participants. Males were significantly more likely than females to vape (ever, current, and daily), to use nicotine-containing e-cigarettes and to perceive that e-cigarettes were less harmful than tobacco cigarettes.

The Smokefree 2025 goal: Fewer than half of respondents in both surveys were aware of the Smokefree goal before completing the survey (T1 43.3%, T2 47.2%); however, support for the goal (T1 95.5%, T2 96.1%) and belief that the goal can be achieved (T1 87.3%, T2 89.8%), and that e-cigarettes/vaping can help achieve it (T1 85.4%, T2 83.6%) were all strong. Māori were significantly more likely to be aware of the Smokefree goal than non-Māori; younger participants were significantly more likely than older participants to believe that that e-cigarettes/vaping can help to achieve the goal; females were significantly more likely than males to think the goal can be achieved; current smokers were significantly more likely than non-smokers to be aware of the goal, but less likely to support it or to think that it can be achieved, and current vapers were more likely than non-vapers to be aware of the goal and to think that e-cigarettes/vaping can help achieve it, but less likely to support it or to think it can be achieved.

Conclusion

The patterns of smoking in New Zealand students were similar at both time points, but the prevalence of vaping (ever, current, daily) and potentially in smokefree spaces, increased by large margins twelve months after e-cigarettes containing nicotine became more easily accessible; however, this increase in vaping was not matched with declines in cigarette smoking.

E-cigarette use was significantly lower in Australian students than in New Zealand students. Furthermore, Australian students were less likely to smoke or vape in smokefree spaces than New Zealand students. Overall, the majority of respondents vaped out of curiosity and perceived e-cigarettes to be less harmful than tobacco cigarettes.

Less than half the respondents were aware of the Smokefree 2025 goal, but support for it, belief that it can be achieved, and optimism that e-cigarettes/vaping can help to achieve it were strong.

Co-Authorship Forms

Cigarette smoking among university students aged 18-24 years in New Zealand: results of the first (baseline) of two national survey

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The candidate contributed over 80% to this work. He planned the study, collected and analysed data, and wrote the manuscript.

Co-authors:
Dr Mark Wallace-Bel (Supervisor), Prof Ann Richardson (Co-supervisor), Prof Randolph Grace (Co-supervisor) and Mrs Pat Coope (Statistical advisor).

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Support for a tobacco endgame strategy in Australia and New Zealand: results from cross-sectional surveys among university students.

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Name: **Mark Wallace-Bell** Signature:  Date: **20.11.2020**

Foreword

Sections of this thesis have been published in a number of peer reviewed articles that may be of interest to a wider audience and stakeholders, including students, tertiary institutions, policy makers, the Ministry of Health, Government, industry, and other interested citizens.

The published work include:

1. "Cigarette smoking among university students aged 18-24 years in New Zealand: results of the first (baseline) of two national survey" (**Appendix 1**).[1]

2. "Change in smoking intentions of university students in New Zealand following simulated cigarette price increases: results of the first of two cross-sectional surveys" (**Appendix 2**).[2]

3. "Electronic cigarette use among university students aged 18–24 years in New Zealand: results of a 2018 national cross-sectional survey" (**Appendix 3**).[3]

4. "Attitudes towards the New Zealand Government's Smokefree 2025 goal associated with smoking and vaping in university students aged 18 to 24 years: results of a 2018 national cross-sectional survey" (**Appendix 4**).[4]

5. "Associations of history of mental illness with smoking and vaping among university students aged 18-24 years in New Zealand: - Results of a 2018 national cross-sectional survey" (**Appendix 5**).[5]

In addition, the following manuscripts have been submitted to peer-reviewed journals for consideration:

1. "Cigarette smoking and e-cigarette use among university students in Queensland, Australia and New Zealand: results of two cross-sectional surveys" (**Appendix 6**).

2. "Support for a tobacco endgame strategy in Australia and New Zealand: results from cross-sectional surveys among university students" (**Appendix 7**)

3. "Attitudes of University Students towards vaping in public, and smoke-free spaces, in Australia and New Zealand: results from cross-sectional surveys" (**Appendix 8**)

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List of Abbreviations

ASH – Action for Smokefree 2025

AUD – Australian Dollar

AUT – Auckland University of Technology

DALYs – disability-adjusted life years

e-cigarette – electronic cigarette

ENDS – electronic nicotine delivery systems

FTND – Fagerstrom Test for Nicotine Dependence

HLS – Health and Lifestyles Survey

HMI – history of mental illness

HPA – Health Promotion Agency

HSC – Health Sponsorship Council

MOH – Ministry of Health

NZ – New Zealand

NZD – New Zealand Dollar

NZSM – New Zealand Smoking Monitor

NZTUS – New Zealand Tobacco Use Survey

PATH – Population Assessment of Tobacco and Health

RYO – roll-your-own tobacco

SFEA – Smoke-free Environments Act

SHS – second-hand smoke

T1 – Time point one (first survey)

T2 – Time point two (second survey)

UC – University of Canterbury

UK – United Kingdom

UQ – University of Queensland

USA – United States of America

VUW – Victoria University of Wellington

WHO – World Health Organization

YIS – Youth Insights Survey

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CHAPTER 1 – INTRODUCTION

This chapter provides a background to this research. An outline of cigarette smoking and electronic cigarette (e-cigarette) use (vaping) in Aotearoa New Zealand (New Zealand or NZ) and Australia, and the New Zealand Smokefree 2025 goal, is provided and the need for the research is discussed. Research objectives and research questions are also provided and the organisation of the thesis is described at the end of this chapter.

1.1 Cigarette Smoking

Cigarette smoking is a leading risk for premature death and disability worldwide.[6 7] In 2015, 11.5% of global deaths (6.4 million) were attributable to smoking.[6] Smoking also causes hundreds of billions of dollars in economic damage due to premature death, disease and health-care costs.[8]

In New Zealand, with a population of about 5 million,[9] smoking is the leading cause of preventable morbidity and mortality, causing approximately 5,000 deaths each year.[10] The most recently-available figures suggest tobacco use was the leading major risk factor for health loss, accounting for over 9% of health loss from all causes (more than 86,000 disability-adjusted life years [DALYs]).[11] Over 96% of this health loss results from active smoking (85,000 DALYs), 3.2% from second-hand smoke (SHS) exposure (2,800 DALYs), 0.4% from the impacts on infants of smoking in pregnancy (400 DALYs), and 0.1% from fires caused by cigarettes (130 DALYs).[11]

Smoking is also a major contributor to inequalities in health and wellbeing with mortality rates among Māori population at roughly twice those of non-Māori non-Pacific people (i.e. NZ European/Other).[12] Furthermore, smoking exerts a heavy burden on the economy, with over NZD1.6 billion lost annually in health-care costs and lost productivity due to smoking-related illnesses and deaths.[13]

Information on smoking prevalence in New Zealand comes from a variety of sources, including the population census and nationally representative surveys such as the Ministry of Health (MOH), New Zealand Health Survey and the Health Promotion Agency's Health and Lifestyles Survey (HLS).[14] The most recent data from the NZHS (2018/19) show that 14.2% of adults

aged 15 years or older were current smokers (i.e. had smoked at least 100 cigarettes in their lifetime and currently smoked at least once a month).[15] The highest current smoking prevalence (19.8%) was in adults aged 35–44 years, while individuals aged 15-17 years had the lowest smoking prevalence (3.8%).[15] The smoking prevalence by ethnicity was 12.4% for NZ European/Other, 34.0% for Māori, 24.4% for Pasifika peoples and 8.4% for Asian.[15] Data on smoking among university students in New Zealand are limited.

The overall prevalence of smoking in New Zealand has declined substantially over the last decade, with current smoking falling from 20.1% in 2006/07 to 14.2% in 2018/19 and daily smoking falling from 18.3% to 12.5%. The prevalence of smoking, however, remains high in individuals aged 18-24 years (current: 19.2%, daily: 15.0%), 35-44 years (current: 19.8%, daily: 18.1%), Pasifika peoples (current: 24.4%, daily: 21.4%) and Māori (current: 34.0%, daily: 30.9%), compared to the total population.[15]

Likewise in Australia, with a population of 25.7 million people,[16] smoking is a leading cause of preventable death and disability, killing nearly 19,000 Australians each year.[17] Smoking also accounted for the greatest proportion of the total burden of disease in Australia (9.3% compared with 8.4% for overweight & obesity, 7.3% for dietary risks, 5.8% for high blood pressure, and 4.7% for high blood plasma glucose) according to the most recent data.[18] Data from the Australian National Health Survey shows that in 2017-18, 13.8% of adults smoked daily and a further 1.4% smoked on a less than daily basis.[19] This is a substantial decrease from 1995, where 23.8% of adults in Australia smoked daily.[19] Data on smoking among university students in Australia are scarce.

1.2 Electronic Cigarettes and Vaping

Electronic cigarettes (also known as e-cigarettes or vaping devices, all of which here are called e-cigarettes) are battery-powered devices that heat a cartridge containing propylene glycol and/or glycerol that becomes a vapour for the user to inhale in a simulated smoking experience called vaping.[20-26] These devices neither contain tobacco nor rely on combustion[23 27] and solutions used in them (e-liquids or e-juices) may or may not contain nicotine and come in a variety of flavours.[24 26 28 29] The user of an e-cigarette is commonly referred to as a *vaper*.[29]

Since their invention in 2003, the vaping industry has constantly evolved, innovated and developed more and more efficient and appealing products,[29] and e-cigarettes come in a wide

range of designs, shapes and sizes.[26 29] Some e-cigarettes look like traditional cigarettes, some look like cigars, or pipes, while others look similar to fountain pens or small flashlights. Some are single-use disposables (non-rechargeable), some use prefilled cartridges and others have refillable cartridges or tanks (modular systems) that users refill with e-liquids or e-juices.

Vaping is a relatively new behaviour that has become increasingly popular throughout the world[21 22 30-41] particularly among smokers and young people. The majority of vapers are ex-smokers, or current smokers,[25 30 42] who cannot or do not want to quit smoking. The rapid success of e-cigarettes appears in part to be related to the close resemblance of e-cigarettes to smoking in the behavioural aspect of use (vaping).[43 44] The appeal of vaping lies in reduced harm, and in some cases cost, compared with smoking traditional cigarettes,[26 42 45] while maintaining a sufficiently similar (in some cases superior) experience to smoking traditional cigarettes.[46 47] A number of clinical trials[37 48] and prospective studies[49] have also supported users' reports of using e-cigarettes to cut down on cigarette smoking, or to quit smoking, to relieve the withdrawal symptoms of tobacco, and to continue having a "smoking" experience, but with substantially reduced health risks.[29 48 50] Moreover, their popularity has been increased by the fact that they can easily be used in many spaces where smoking is not allowed, they are often competitively priced, and the majority of users perceive them as much less harmful alternatives to smoking.[22 29 30 33 34 39 42 51 52]

In tobacco control, harm reduction strategies are aimed at reducing the adverse health effects of cigarette smoking in individuals unable or unwilling to quit smoking[49] and reducing the amount of tobacco consumption (e.g. number of cigarettes/day) is a common harm reduction strategy. The growing evidence suggesting vaping is helping smokers to reduce smoking and elicit enduring tobacco abstinence makes it logical to see vaping as an emerging strategy for tobacco harm reduction.[27] The current scientific consensus is that vaping is probably safer than smoking, but vaping is not without harm. However, vaping remains a contentious (and political) issue with some countries, like Australia have highly restrictive policies on availability, access and use of e-cigarettes while others, such as the UK and New Zealand (after March 2018) fully embrace harm reduction approaches and have much permissive regulatory frameworks.[53 54]

The popularity of vaping has also grown significantly in New Zealand and Australia, particularly among smokers and young people. A 2013 study reported that 23% of adult

smokers and 39% of recent quitters in New Zealand had ever vaped.[55] In 2014, 13.1% of New Zealand adults (i.e. people aged 15 years or over) reported ever vaping and 0.8% were current vapers.[25] In a recent systematic review, it was noted that ever e-cigarette use among adults and adolescents in New Zealand had increased, but current use remained low.[56] In Australia, 2010/11 data from the International Tobacco Control Four Country Survey show that 20% of Australian current smokers and former smokers were aware of e-cigarettes and about 11% had tried e-cigarettes; 3% were current users.[33] However, as is the case with smoking, data on vaping among university students in New Zealand and Australia are scarce, and little is known about the impact that vaping might have on smoking.

Until recently, it was illegal to sell e-cigarettes containing nicotine in New Zealand[40] and Australia[23] but individuals could import them for personal use. This policy changed in New Zealand following a landmark ruling in *Philip Morris v Ministry of Health (CRI-2017-085-001107 [2018] NZDC 4478)* in which the District Court found that all tobacco products (including e-cigarettes containing nicotine) may be lawfully imported, distributed and sold in New Zealand under the Smoke-free Environments Act 1990 (SFEA).[57] The ruling was made on 27 March 2018 and effectively overturned restrictions that previously existed on e-cigarettes containing nicotine in New Zealand. Even so, nicotine is still a scheduled substance under the Medicines Act 1981 and it is illegal to sell e-cigarettes while making a therapeutic claim, unless they have been approved for that purpose by Medsafe.[58]

The e-cigarette regulatory environment is rapidly evolving in New Zealand, but not in Australia; both had similar policies on e-cigarettes containing nicotine, but the policy changed in one and not the other, and this has provided an opportunity for a ground-breaking comparison between the two countries. This is similar to other researchers' use of a natural experiment (as used by John Snow in identifying the cause of cholera,[59] and by Fergusson et al. in assessing the effects of earthquakes on mental health, where the members of the Christchurch Health and Development birth cohort who were still living in Christchurch at the time of the earthquakes were compared with the other cohort members).[60] No study has previously examined the impact of government policy on vaping, and smoking behaviour in New Zealand (and/or Australia), and this thesis sought to narrow the knowledge gap in this, and other areas.

1.3 The Smokefree 2025 goal

The New Zealand Government adopted the Smokefree Aotearoa 2025 goal (referred to here as Smokefree 2025 goal or Smokefree goal) in March 2011. The Smokefree goal committed the Government to work toward making New Zealand a smokefree country by the year 2025.[61] *Smokefree* here refers to having fewer than 5% of the population smoking by the year 2025. This goal was in response to the recommendations of a landmark Parliamentary inquiry by the Māori Affairs select committee into the tobacco industry in New Zealand and the consequences of smoking for Māori.[61] Smoking prevalence is disproportionately high among Māori,[15] who also bear a disproportionate amount of the harms associated with smoking.[12]

The three main pillars of the Smokefree goal include:

1. To protect children from exposure to tobacco marketing and promotion
2. To reduce the supply of, and demand for tobacco
3. To provide the best possible support for quitting smoking tobacco

Over the last decade, the Government has used the Smokefree Environments legislation to put in place a number of measures to reduce the prevalence of smoking. These include annual tobacco tax increases of 10%,[62] restrictions on the display of tobacco products in retail outlets, and a softer approach to vaping, in an effort to encourage smokers who wish to switch from smoking to vaping and/or use e-cigarettes as a tool to quit smoking.[58] To underscore this point, the MOH recently (June 2019) launched a dedicated website to provide accurate and evidence-based information about vaping to New Zealanders.[63]

Literature on the awareness of, support for, and perceptions of the Smokefree goal, among university students is lacking, and this research sought to fill this information gap, among other goals.

1.4 Research Objectives

The research reported in this thesis had the following objectives:

1) To estimate the prevalence, and patterns of smoking among university students in New Zealand before (i.e. time period 1 or T1) and after policy change on e-cigarettes containing nicotine (i.e. time period 2 or T2).
2) To assess e-cigarette use behaviour, reasons for use and perception of harm compared with tobacco cigarettes, among university students in New Zealand at T1 and T2.

3) To assess the awareness of, support for, and perceptions about the Smokefree 2025 goal among university students in New Zealand at T1 and T2.
4) To compare the results of New Zealand university students for smoking and vaping at T1 with results of university students from Australia.

The overall hypotheses for this research were that T2 would demonstrate a decrease in the prevalence of smoking, an increase in the prevalence of vaping and in switching to vaping among students who smoke, and a strong level of awareness of the Smokefree goal, support for it and belief that it can be achieved and that vaping can help to achieve it.

Because this is the first research of its kind in New Zealand to assess smoking, vaping, and the Smokefree 2025 goal among university students, this thesis will provide vital data that can improve the understanding of these key issues that have profound impacts on health, and contribute to policy considerations that promote public health. Furthermore, the information generated could lay a foundation for future research in this area in New Zealand and Australia.

1.5 Research Questions

This study will address the following key questions:

1. What is the estimated prevalence of smoking among university students in New Zealand? (objective 1)
2. What is the estimated prevalence of vaping among university students in New Zealand? (objective 2)
3. What is the estimated awareness of the Smokefree 2025 goal, support for it and thoughts about its achievability, and the potential role of vaping to help achieve it, among university students in New Zealand? (objective 3)
4. How does the prevalence of smoking and vaping among university students in New Zealand compare with university students in Australia? (objective 4)
5. What is the potential impact of government policy (on e-cigarettes containing nicotine) on vaping and smoking? (objectives 1 and 2)

1.6 Secondary outcomes

In addition to the main objectives described in Section 1.4, a number of outcomes (secondary outcomes) associated with smoking and vaping were assessed. These includes:

1. Association of history of mental illness (HMI) with smoking and vaping
2. Support for a tobacco endgame strategy in New Zealand (and Australia)
3. Attitudes towards vaping in smokefree spaces in New Zealand (and Australia)

1.7 Thesis Organisation

This thesis begins with an introduction chapter (Chapter 1) where the background to the research is described and the research objectives and research questions are provided.

Chapter 2 (Literature Review) summarises the important literature on smoking by educational attainment; vaping among students and young people; the awareness of, and support for the Smokefree 2025 goal among young people; the potential impact of vaping on this goal; the association of history of mental illness with smoking and vaping; support for a tobacco endgame strategy for New Zealand and Australia, and attitudes towards vaping in smoke-free spaces in New Zealand and Australia.

Chapter 3 (Methodology) describes the research methods used in this thesis to answer the research questions identified in Chapter 1. This chapter also includes the study design and population, sampling and sample size, sample selection, data collection tools and procedures, data management and data analysis, and ethical considerations.

Chapters 4 to 6 present the results of this thesis. Chapter 4 (Results - 1) provides the findings of New Zealand data, including demographic characteristics and results of cigarette smoking, vaping and the Smokefree 2025 goal. Chapter 5 (Results - 2) presents the findings of the Australian (University of Queensland [UQ]) data, including demographic characteristics, smoking and vaping. Chapter 6 (Results - 3) compares the results of New Zealand data at T1 with T2, highlighting important differences.

Chapter 7 (Discussion) provides an overall discussion of research findings and critically assesses them in relation to findings of previous research. This chapter also includes the strengths and limitations of the study, implications of the findings, conclusions, and recommendations.

Chapter 8 (Research Outputs) provides a brief description of the scholarly outputs of this research, highlighting novel findings and recommendations for policy and interventions in tobacco control.

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CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction

This chapter starts by summarising the literature about smoking by educational attainment; vaping among students and young people; the awareness of, and support for the Smokefree 2025 goal among young people, and the potential impact of vaping on this goal. It also discusses the associations of mental illness with smoking and vaping and support for a tobacco endgame strategies, and attitudes towards vaping in smoke-free spaces, in New Zealand and Australia.

2.2 Smoking by educational attainment

The link between education and smoking is well established and New Zealand is no exception. People who have high educational attainment have lower prevalence of cigarette smoking than the general population, and for those who smoke, tend to smoke less heavily than people with low educational attainment.[1] High educational attainment promotes populations' health through adopting healthier lifestyles (e.g. not taking up smoking) and reducing exposure to environmental risk factors (e.g. second-hand smoke) because they are more likely to live in safer neighbourhoods that have better job opportunities.[1 2] However, the health benefits of higher socioeconomic status, including higher educational attainment, are not necessarily uniform across different population groups (e.g. by age, gender, race, ethnicity, etc.).

According to data obtained from the 2013 New Zealand Census of Population and Dwellings (customised analyses from Statistics New Zealand), about 7% of adults aged 15-24 years who were studying smoked, compared to almost 25% of those who were not studying, and the prevalence of smoking was highest in Māori followed in decreasing order by Pasifika peoples, New Zealand European and Asian.

Currently, there is limited information on smoking among tertiary students (university, polytechnic, institute of technology, Wānanga, etc.) either in New Zealand or Australia. A 2013 survey that estimated the prevalence of daily and occasional smoking among university students aged 17-25 years from five New Zealand universities reported 14% of participants smoked occasionally and 3% smoked daily.[3] These estimates were substantially lower than those in the wider population within the same age-group.[4] In a previous survey of students at

University of Otago in 2002, it was found that 10% of respondents smoked daily and a further 10% smoked occasionally.[5] These estimates were likewise substantially lower than those among similar-aged people in the general population at the time, which ranged between 18.8-26.8% in ages 15-19 years and 29.8-30.3% in ages 20-24 years.[6]

As with nearly every dimension of health, those with more education experience better outcomes, tend to adopt healthier behaviours, and, as a consequence, experience better health outcomes than those with less education.[7] It is possible that despite guaranteed free education at state schools for New Zealanders aged 5-19 years,[8] family contributions for school uniforms, school trips, sports, among others, may play a role in deepening the existing socioeconomic and educational divide between Māori and non-Māori. It is also possible that institutional racism in the New Zealand education system also contributes to worse educational outcomes for Māori.

Australia has seen marked reductions in smoking among adolescents aged 12-17 years and young adults aged 18-24 years,[9] with 3.4% of people aged 12-17 smoking daily in 2013.[10] Data about the prevalence of smoking among students are sparse. A 2010 cross-sectional study, which used a purposive sampling procedure, of university students aged 18-30 years (n=2,414) at the University of Brisbane reported that 18.8% of the sample (24.9% male students and 16.6% female students) smoked.[11] An earlier survey of Curtin University students (ages 17-24 years) found 10.2% of respondents were current smokers (in that study, current smokers were occasional or daily smokers).[12]

Many students experience fundamental changes in social contexts and identity as they transition to life away from home and make new friends at university.[13] [14] This increased level of independence, new peers, and a so-called natural sense of curiosity among young people may promote smoking among students who occasionally smoked, and increase progression to daily smoking.[14] Other factors know to influence smoking among university students include being male, older age,[15] lower academic attainment, higher number of close friends[16] or family members who smoke, and subject or programme of study. Since the consequences of smoking are often chronic and fatal, it is important to understand the prevalence and patterns of smoking early to support policy and interventions that promote public health (students and the population).

All universities in New Zealand are smoke-free. Some universities, including the University of Canterbury,[17] University of Waikato,[18] and University of Otago[19] also prohibit vaping on campus; the University of Auckland,[20] Auckland University of Technology[21] and Victoria University of Wellington[22] have policies which do not explicitly prohibit vaping, while Massey University[23] and Lincoln University[24] have designated areas on campus where people can smoke or vape (**Table 2.2.1**).

Table 2.2. 1. Smoke-free policies of New Zealand universities.

University	Cigarette smoking and e-cigarette policy
University of Canterbury	Smoking or vaping not allowed at all University buildings and grounds, including university vehicles, except designated areas at the rear of Ilam Homestead.
Victoria University of Wellington	Smoking is not permitted, on any campus or vehicle owned or hired by the University.
Lincoln University	- Smoking is not permitted in any buildings, including student accommodation, any vehicle owned or leased by the university or outside the main entry gates to the university. - Temporary concessions for outdoor smoking and vaping spaces are available on campus.
Massey University	- Massey University is smoke-free, including all workplaces, student accommodation, campus grounds and buildings, farms, staff accommodation, vehicles (including personal vehicles on site). - Temporary smoking/vaping concessions (vaping shelters, smoking shelters etc.) are available on the Auckland and Manawatū campuses.
The University of Auckland	Smoking is not allowed on any campus, facility or vehicle of the University unless smoking is carried out for experimental or research purposes under conditions and terms laid down by the University's Human Participants' Ethics Committee.
University of Otago	Smoking or vaping is not allowed on any University of Otago Campus.
The University of Waikato	Smoking is not permitted on campus or in any University vehicle.
Auckland University of Technology (AUT)	Smoking is not allowed in any University buildings or open spaces within the City, North Shore and Manukau campuses.

2.3 Vaping among students and young people

In New Zealand, literature suggests that adolescents and young adults are more likely to try vaping than their older counterparts. Li and others used the 2011/12 data from the New Zealand Smoking Monitor (NZSM) and found participants aged 18-24 years were four times as likely

to have ever purchased an e-cigarette than participants aged ≥45 years.[25] In a 2015 study, White and colleagues reported an almost tripling of ever vaping rates among New Zealand adolescents from 7.9% in 2012 to 19.9% in 2014.[26] The 2017 ASH Year 10 students survey (a national survey of students aged 14-15, with a 49% school participation rate) reported that 29.1% of students ever vaped and 1.9% vaped daily.[27]

At a national level, data from the New Zealand Health Survey, an annual survey of a representative sample of over 13,000 adults, shows that in 2018/19, people aged 18-24 years had the highest prevalence of e-cigarette ever use (47.3%) and at least once a month (i.e. current use) (8.8%), and third highest prevalence of daily use (4.5%) (**Table 2.3.1**).[28]

Table 2.3. 1. E-cigarette use: ever, at least once a month and at least once a day, in adults aged 15+ years in New Zealand (adapted from the 2018/19 New Zealand Health Survey).[28]

	Ever tried an e-cigarette			**Used an e-cigarette at least once a month**			**Daily use**		
	Men (%)	**Women (%)**	**Total (%)**	**Men (%)**	**Women (%)**	**Total (%)**	**Men (%)**	**Women (%)**	**Total (%)**
15-17 years	26.7	23.0	**25.0**	3.8	3.0	**3.4**	1.7	1.6	**1.7**
18-24 years	56.0	38.4	**47.3**	10.8	6.7	**8.8**	5.5	3.4	**4.5**
15-24 years	46.5	33.7	**40.3**	8.5	5.5	**7.1**	4.3	2.8	**3.6**
25-34 years	35.6	28.9	**32.2**	9.7	4.3	**7.0**	6.9	3.3	**5.1**
35-44 years	30.3	19.3	**24.6**	9.0	3.8	**6.3**	7.3	2.7	**4.9**
45-54 years	16.6	17.9	**17.3**	4.2	4.4	**4.3**	3.0	3.1	**3.0**
55-64 years	11.6	9.4	**10.5**	3.5	1.9	**2.7**	2.8	1.5	**2.1**
65-74 years	5.9	5.2	**5.5**	1.7	1.3	**1.5**	1.2	0.8	**1.0**
75+ years	2.5	1.0	**1.6**	0.3	0.1	**0.2**	0.3	0.0	**0.2**
Māori	42.5	43.8	**43.2**	10.0	6.6	**8.2**	6.8	4.3	**5.5**
Pacific	35.5	24.4	**29.4**	4.2	4.4	**4.3**	2.6	3.4	**3.0**
Asian	19.9	6.6	**13.5**	5.4	1.1	**3.3**	3.6	0.5	**2.1**
European/Other	22.9	18.1	**20.4**	6.1	3.4	**4.7**	4.2	2.3	**3.2**

Literature is lacking on vaping among tertiary students in New Zealand and Australia and most published studies in New Zealand have focused on students in secondary schools.[26 27 29] The prevalence, and patterns of e-cigarette use among tertiary students in New Zealand and Australia would however expected to vary between the two countries in part due to significant differences in policies on vaping and governance systems. **Table 2.3.2** shows the regulatory frameworks for e-cigarettes in Australia and New Zealand.

Table 2.3. 2. The regulatory frameworks for e-cigarettes in Australia and New Zealand .[30 31 32 33]

Country	Regulatory frameworks for e-cigarettes
Australia	- Nicotine is classed as a poison under Commonwealth legislation, with exemptions if a product is approved for therapeutic use, for a smoked tobacco product, or for use in animals. - Sale of e-cigarettes containing nicotine is prohibited in all states - Individuals can import e-cigarettes containing nicotine for personal use (up to 3 months' supply) under certain conditions. - Sale of e-cigarettes not containing nicotine to people aged under 18 years is subject to different state laws: prohibited in Queensland, NSW and ACT. - Restrictions on vaping in smokefree areas vary from state to state: prohibited in all legislated smokefree areas in Queensland and ACT. - Federal restrictions on advertising of therapeutic products apply. State-level restrictions vary: Queensland, NSW, and ACT prohibit advertising and promotion, and display of e-cigarettes at retail outlets.
New Zealand	**Prior to 27 March 2018:** - Access to e-cigarettes containing nicotine was restricted, but individuals could import them for personal use (up to 3 months' supply). - Retail outlets were only permitted to sell e-cigarettes that did not contain nicotine. - E-cigarette advertising and promotion was not restricted. - Vaping in public places where tobacco is banned was not prohibited. **After 27 March 2018:** - All tobacco products, including e-cigarettes containing nicotine, could be lawfully imported, distributed and sold under the Smoke-free Environments Act 1990. - E-cigarette advertising and promotion was not restricted. - Vaping in public places where tobacco is banned was not prohibited.

Current studies on vaping among college/university students predominantly come from the USA and Europe. In USA studies, the prevalence of ever e-cigarette use among tertiary students ranges from 27-29% with common predictors being current smoking and male gender,[34 35] while in European studies, the prevalence of ever e-cigarette use in tertiary students ranges from 23-31% with a common predictor of current smoking.[36-38] Aside from North America and Europe, a large study of Korean university students aged 19-29 years (n=2,167) found 21.2% of respondents ever vaped, 96.3% of whom also tried conventional cigarettes.[39] Dual users of e-cigarettes and conventional cigarettes were likely to be male (OR: 4.28, 3.21-5.70), to have close friends who smoke (OR: 11.29, 5.52-23.10) and to have siblings who smoke (OR: 1.78, 1.30-2.43).[39]

Research also suggests that non-use of e-cigarettes in young adults is correlated with higher knowledge of so-called negative effects associated with vaping and higher self-confidence of the young person.[40] In light of the unknown implications of vaping on tobacco use (positive or negative), it is important to understand how these devices (e-cigarettes) are being used by university students, a population at high risk for smoking.

2.4 Awareness of and Support for the Smokefree 2025 goal among young people

Currently, literature on the awareness of, support for, and perceptions of the Smokefree goal is lacking. Data from the Youth Insights Survey (YIS) show that in 2018, 45% of Year 10 students (ages 14-15 years) were aware of the Smokefree goal, with significant disparities across the predominant ethnic groups: NZ European/Other students were more likely to be aware of the goal, while Pacific students were less likely to be aware.[41] Although in total 80% of the students supported the goal, this was higher for non-Māori (83%) and non-Pacific (82%) compared with Māori (72%) and Pacific (67%) students respectively.[41]

The report used a prioritised ethnicity approach: each participant was assigned to a single ethnic group based on the ethnicities that they identified with, prioritised in the order of Māori, Pacific, Asian and European/Other.[41] With regards to gender, support for the Smokefree goal was higher in females than males (83% vs. 78%), higher for never smokers than ex/experimental and current smokers (86% vs. 69% and 32%), and higher for students attending high (86%) and medium decile (80%) schools, compared with students attending low decile schools (70%).[41]

> Deciles are a measure of the socio-economic position of a school's student community relative to other schools throughout the country. For example, decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10% of schools with the lowest proportion of these students.[42]

In addition, the report found that the awareness of the goal had increased substantially between 2012 and 2018. A 2012 study of Year 10 students reported that 34% thought the goal can be achieved.[43] The levels of awareness and support for the goal are, however, likely to be different in university students and these data were unavailable prior to the research reported in this thesis.

2.5 The Potential impact of vaping on the Smokefree goal

Despite the exponential growth in popularity of e-cigarettes among users globally, the role of vaping in tobacco control remains controversial, particularly in young people. Proponents of vaping argue that it can potentially help smokers to reduce smoking or quit smoking altogether thus reduce the health burden of smoking.[44-47] Furthermore, some health advocates argue that e-cigarettes show tremendous promise in the fight against tobacco-related morbidity[48] and can be used as a harm reduction tool for smokers who don't want to quit smoking. In contrast, opponents argue that vaping might undermine current tobacco control policies, and create new nicotine addicts who could later transition to smoking.[48-51]

Evidence suggests that e-cigarette users (mostly smokers or former smokers) report that vaping helps them to deal with cravings for cigarettes and withdrawal symptoms, and to quit smoking or avoid relapsing and most ex-smokers (79% in one study) fear they might relapse to smoking if they stopped vaping.[45] In addition, some longitudinal studies of adult e-cigarette users have reported higher odds of quitting smoking in respondents who vaped intensively (i.e. vaped daily and/or used devices that can be refilled with liquids) compared with respondents who did not vape intensively (i.e. vaped non-daily and/or used disposable devices).[44 52]

Randomised controlled trials of e-cigarette use in adult smokers not intending to quit smoking, in New Zealand[53] and elsewhere[47] have found e-cigarettes, with or without nicotine, to be as effective at helping smokers to quit as nicotine patches[53] and to be associated with decreased cigarette consumption and eliciting enduring tobacco abstinence without causing significant side effects.[47] One prospective study of the effect of vaping on smoking reduction and cessation in smokers unwilling to quit[46] also found high combined sustained 50% reductions in the number of cigarettes/day and smoking abstinence (55% of participants, with an overall 88% reduction in cigarettes/day). These findings are encouraging from a public health point of view.

There are, however, legitimate concerns in the eyes of some public health experts and policy makers, about e-cigarettes/vaping, including as-yet-unknown health risks associated with vapour constituents; whether vaping perpetuates addiction to nicotine; whether vaping serves as a gateway to smoking for non-smokers, particularly youth; and whether it makes smoking socially acceptable again, thus undermining decades of tobacco stigmatisation efforts and current no-smoking policies.[54] Of great concern is the possibility that vaping would create a new generation of nicotine-dependent individuals who could graduate to cigarette smoking.

However, there is little evidence to determine whether this is or is not the case. A recent article that published findings from repeated cross-sectional studies (2014-19) of e-cigarette use and cigarette smoking in youth aged 14-15 years in New Zealand,[29] found an overall decline in smoking over the 6 year period assessed, suggesting that e-cigarettes might be displacing cigarette smoking in this population group. Daily use of either product (e-cigarettes: 1.1% to 3.1%, cigarettes: 1.9% to 2.8%) was extremely low. Data from youth in New Zealand,[29] the UK,[55 56] the USA[57] and beyond suggests low prevalence of e-cigarette use in youth who have never smoked. Few studies have reported cigarette uptake of smoking in youth who were tobacco-naïve at baseline but vaped.[58]

A general consensus among health experts, particularly in New Zealand, is that e-cigarettes could offer significant health benefits through reductions in smoking if used primarily by smokers, who intended to quit smoking. This could have a hugely significant and positive impact on New Zealand's Smokefree 2025 goal and has the support of the MOH. The MOH position statement on the potential role of vaping on tobacco control in New Zealand reads:

> **Position Statement on vaping**
>
> In 2011, the [New Zealand] Government set a goal for Smokefree 2025. The goal aims to reduce smoking prevalence to minimal levels.
>
> The Ministry of Health considers vaping products have the potential to make a contribution to the Smokefree 2025 goal and could disrupt the significant inequities that are present.
>
> The potential of vaping products to help improve public health depends on the extent to which they can act as a route out of smoking for New Zealand's 550,000 daily smokers, without providing a route into smoking for children and non-smokers.
>
> The Ministry of Health encourages smokers who want to use vaping products to quit smoking to seek the support of local stop smoking services. Local stop smoking services provide smokers with the best chance of quitting successfully and must support smokers who want to quit with the help of vaping products.

Expert opinion is that vaping products are much less harmful than smoking tobacco but not completely harmless. A range of toxicants have been found in vapour including some cancer causing agents but, in general, at levels much lower than found in cigarette smoke or at levels that are unlikely to cause harm. Smokers switching to vaping products are highly likely to reduce the risks to their health and those around them.

When used as intended, vaping products pose no risk of nicotine poisoning to users, but vaping liquids should be in child resistant packaging. Vaping products release negligible levels of nicotine and other toxicants into ambient air with no identified health risks to bystanders.

Currently there are no mandatory product safety requirements specifically for vaping products in New Zealand, however generic product safety standards apply.

The Ministry of Health will continue to monitor the uptake of vaping products, their health impact at individual and population levels, including long term effects and their effectiveness for smoking cessation as products, evidence and technologies develop.
The Ministry of Health will also continue to meet its obligations under Article 5.3 of the WHO Framework Convention on Tobacco Control to protect public health policy from commercial and other vested interests of the tobacco industry.[59]

2.6 The association of history of mental illness (HMI) with smoking and vaping

Individuals with mental illness have higher prevalence of smoking than people in the general population.[60-65] In addition, depression and anxiety are recognised to be strong predictors of experimenting with cigarettes and transitioning to regular smoking among teenagers.[66-68] No previous study has investigated the relationship between mental illness and smoking among tertiary students in New Zealand or Australia and literature on this association predominantly come from the United States of America (the USA). One such study found measures of poor mental health (tremendous stress, low perceived health status, inadequate sleep) to be associated with tobacco use in college students.[69] A second study that involved students from five universities reported higher prevalence of smoking among students who suffered from depression than students who did not suffer from depression.[70] Another study that assessed the burden of tobacco use in students who sought treatment at university health centre found

students who reported smoking 10 cigarettes/day or more (i.e. heavy smokers) were more likely to report substantially poorer measures of well-being, greater symptom burden, and more functional disability compared with students who did not smoke.[71]

Besides this thesis, no other study has reported on the associations between vaping and mental illness in New Zealand. A small number of studies conducted elsewhere however, suggest that people with HMI are more likely to have tried e-cigarettes, or to be current users than people who do not have an HMI.[72-75] This makes sense in part because of high prevalence of smoking in people who have an HMI, and high prevalence of vaping in people who smoke.

Information about the associations between HMI and smoking and vaping among university students is important because it can help to: (1) determine whether such associations exist in New Zealand, (2) provide information to relevant student services (student health, student associations and other support groups) about students who might have unrecognised mental illness, and (3) help determine the need for support services on campus.

This association was only assessed in New Zealand students because the Australian data did not allow for the constitution of the main variable (i.e. HMI). The following hypotheses were tested: (1) that students with HMI would have higher prevalence of smoking and vaping than students without HMI, (2) that students with HMI would have lower quit intentions and lower quit attempts than students without HMI, and (3) that students with HMI would have higher prevalence of using nicotine-containing e-cigarettes, than students without HMI.

2.7 Support for a tobacco endgame strategy for New Zealand and Australia

Debate on a tobacco-free future has gained momentum in the global public health community in recent times[76] and a number of potential "endgame" strategies have been proposed to end tobacco use,[77] including ending the commercial sales of cigarettes (and other tobacco products).[78 79] New Zealand wants to be "smoke-free" (i.e. reduce the prevalence of smoking to <5%) by the year 2025.[80] Other countries with smoke-free policies or intentions include Finland (<5% smoking by 2030 and 2% by 2040),[81 82] the UK ("smoke-free" by 2030),[83] Scotland (<5% smoking by 2034),[84] Ireland (<5% smoking by 2025)[85] and Canada (<5% smoking by 2035).[86] Australia, for its part, does not seem to have a clear endgame strategy.

Evidence suggests public support for tobacco endgame strategies exists. Studies in New Zealand show strong support for endgame strategies among people who smoke or have recently quit,[87 88] with one study reporting nearly half (46%) of participants supporting banning cigarette sales in 10 years (if effective nicotine substitutes were available).[87] Support for a complete ban of tobacco sales in Australia (within ten years) was between 59% and 72% in the general population and 37% to 57% among individuals who smoked.[89 90] Public support for ending sales of tobacco in the USA, UK and Canada ranged from 30% to 45%[89 91] and in Albania, Croatia and Italy from 58% to 61%.[77] Another study, in Hong Kong, found that 75% of people who never smoked supported a total ban on the use and possession of tobacco compared with 64% of people who previously smoked and 49% of people who "currently" smoked.[92]

Prior to this research, information about support for tobacco endgame strategies among tertiary students in New Zealand (or elsewhere) was lacking. Young adults, a key demographic of university students, are crucial to the survival or demise of the tobacco industry. When more young people take up the habit, they ensure the growth and sustainability of the tobacco industry by replacing those exiting either through quitting, switching to other products (e.g. e-cigarettes) or dying. A reduction in the uptake of smoking in this population would make the tobacco industry unsustainable in the future and accelerate its demise. It is therefore important to assess support for endgame strategies in university students to help inform policy and develop interventions that advance New Zealand's smoke-free aspirations.

These hypotheses (1) that support for endgame strategies would be higher in students who do not smoke or vape (i.e. non-users) than in students who smoke and/or vape, and (2) that support would be higher in younger students than older students, in females than males, and in domestic than international students, are tested in a manuscript (**Appendix 7**), described in **section 8.3.**

2.8 Attitudes towards vaping in smoke-free spaces in New Zealand and Australia

The growth of e-cigarette use by smokers wanting to quit smoking[93 94] or to reduce harm from smoking, while satisfying their nicotine needs (i.e. vaping as a harm reduction tool), has made vaping more visible in New Zealand and beyond. The increased availability, accessibility and use of e-cigarettes, tolerance from the public attitudes towards vaping,[95 96] and the uncertainty about where vaping fits in society, increases the likelihood of vaping in smoke-free spaces.

Smoke-free spaces are designed to protect the public from involuntary exposure to second-hand smoke[97] and reduce tobacco use among people who continue to smoke. For these reasons, it is important to ensure that smoke-free spaces remain safe and accessible to the population. This calls for clear understanding of how and where e-cigarettes are used to guide policy and interventions that protect the public against passive exposure to potentially harmful aerosols.

Data on vaping in public spaces, and in smoke-free spaces (indoor or outdoor)[98] are lacking. The following hypotheses are tested in a journal manuscript (**Appendix 8**) and described in **section 8.3** of this thesis: (1) that the majority of students would not support people vaping around them, (2) that the majority of students would not support vaping in smoke-free spaces, and (3) that more males than females, more older students than younger students, more domestic than international, and more students who smoke and/or vape than students who neither smoke nor vape would support vaping in smoke-free spaces.

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CHAPTER 3 – METHODOLOGY

This chapter describes the research methods used in this thesis. It includes a detailed description of the study design, the sample, data collection, and data analysis. The chapter also describes and explains reasons for the various steps used to collect and analyse data.

3.1 Study Design and Population

This was a quantitative project involving New Zealand and Australian university students. In both New Zealand and Australian student surveys, the study population was university students, recruited by two separate research teams that worked collaboratively. The Australian team consisted of researchers from UQ, who were investigating smokefree campus policies that were soon to be introduced at UQ (in the third quarter of 2017), while the New Zealand team consisted of the author of this thesis (PhD student) and the supervisory team, at the University of Canterbury (UC).

Following initial correspondence through emails, the two teams formalised the collaboration in July 2018 with researchers from each team included in the ethics applications of the other to facilitate access to research tools (questionnaires) and data. This collaboration provided significant benefits for both teams in terms of accessing large groups of participants that were similar in age, gender, and general behaviour patterns (experimentation, risk taking behaviour, curiosity, etc.) for comparison purposes. In addition, the institutional environments provided convenient, accessible, and stable populations to study.

Data were collected at time point 1 or T1 in March – May 2018 and time point 2 or T2 in March 2019 in the New Zealand survey and at one time point in August-November 2017 in the Australian survey. It was illegal to buy or sell e-cigarettes containing nicotine in New Zealand at the start of T1 data collection (prior to 27 March 2018), but this changed abruptly following a ruling by the District Court in *Philip Morris v Ministry of Health*[1] that allowed e-cigarettes containing nicotine to be lawfully imported, distributed and sold in New Zealand under the Smoke-free Environments Act 1990 (SFEA). However, these products did not become widely available immediately, it took several weeks for e-cigarettes containing nicotine to become widely available because they had to be imported (e-cigarettes and e-liquids or e-juices are not produced locally in New Zealand). Data for T2 survey were collected in March 2019.

Although the original plan was to collect data at two time points in Australia, as occurred in New Zealand, this did not eventuate. The second Australian survey had been scheduled to take place between September and December 2019, but a series of events made it impossible to conduct the second survey (i.e. bushfires in Queensland and across Australia between June 2019 and February 2020,[2] the Summer holidays, and the Covid-19 pandemic[3]).

3.2 Inclusion Criteria

To be included in the student surveys, participants had to be enrolled at a New Zealand university (NZ component) or at UQ (Australian component), at the time of the survey(s). Participants were also required to provide informed consent by answering "Yes" to the question "Do you agree to take part in this survey?" after information on the project and participants' role in the project was provided. In the online questionnaire participants could not proceed without answering "Yes" to this question, while in the paper questionnaire all respondents who completed the questionnaire were deemed to have consented to participate even if they did not respond to the consent question.

3.3 The questionnaires

Questionnaires used in both countries (**New Zealand – Appendix 9 and 10, Australia – Appendix 11**) had similar core questions on smoking, vaping and participant health in the previous 12 months (**Appendix 12**), in addition to country-specific questions. The NZ component had additional questions on the Smokefree 2025 goal (**Appendix 9**). In October 2017, 22 students at UC participated in a pilot of the proposed questionnaire and research methods.

3.4 Ethics approval

The University of Canterbury Human Ethics Committee approved the NZ component (research ethics ID: HEC 2017/42/LR-PS) (**Appendix 13**), while the University of Queensland School of Public Health Research Ethics Committee granted approval for the Australian component (ethics approval number: MW1723) (**Appendix 14**). Researchers from both countries were included in both ethics applications to facilitate access to research methods and data. In addition, the NZ component engaged Māori (Ngāi Tahu) Consultation and Engagement Group and the project was deemed worthwhile and accounted for participants' (cultural) needs (**Appendix 15**).

3.5 Data Management

In neither country did the questionnaires require participants to provide information that could identify them. However, participants could opt to be included in a draw to win a prize (ten NZD100 cash prizes in the NZ component and one AUD500 campus travel voucher for the Australian component), after the survey as a token of appreciation (NZD and AUD are very similar in value to each other, unlike USD and either AUD or NZD). Those who entered the draw were asked to provide contact details so they could be contacted if they won. In addition, in the NZ component, participants who wished to receive a copy of the results, or to receive information about future research on this topic, were asked to provide their first name and telephone number or email address. No contact details were needed for, or used, in the analyses.

In the NZ component, at the completion of data collection, data from paper questionnaires were entered into the online system on a single university (password protected) laptop computer to generate a single data file that was backed up remotely by Qualtrics. The Qualtrics data file was exported as an SPSS file and kept securely in a password protected folder. A copy of the data file was maintained in a separate portable external hard drive, also password protected. The data file was then imported to the IBM SPSS Statistics 25 software for data preparation and validation, which included the creation of a unique variable to distinguish the responses collected online and those collected through paper questionnaires. Entries from paper questionnaires were checked for any errors and discrepancies and identified errors/discrepancies were corrected by reference to the paper questionnaires.

In the Australian component, data were shared through UQ Research Data Manager (UQRDM), a secure online data-sharing platform, operated by the University of Queensland. These data were cleaned, recoded, and analysed separately.

3.6 The New Zealand Component

3.6.1 Sample Size

The NZ component included two separate cross-sectional data collection cycles (T1 and T2). Each data collection cycle set to recruit at least 1,061 students from across the country, and aimed for a sample that was representative of New Zealand university students. Multiple approaches were used to increase the participation of Māori and Pasifika students. Under the assumption of simple random sampling, sample size calculations were based on the Universities New Zealand 2016 data:[4] the total New Zealand university students was 172,000, 85% of whom were domestic students (11% Māori, 7.8% Pasifika and 81.2% non-Māori non-Pasifika), and 15% international students. A confidence interval (CI) of 95%, estimated proportion of smoking of 0.5 (conservative estimate), margin of error of 3%, and estimated response rate of 10%, were also used in sample size calculations. The conservative response rate of 10% was chosen because literature is scarce on previous studies involving university students in New Zealand that used sampling approaches similar to the ones used in this thesis; most research on university students in New Zealand has used student enrolment lists to recruit participants.[5] [6] 10,610 students were to be invited. Input was also obtained from the biostatistician in the School of Health Sciences.

The estimated response rate of 10% was informed by a significantly higher response of over 30% in a pilot study of this project conducted in October 2017 in the School of Health Sciences at UC. A link to the online survey (for the pilot study) was posted on the university's online learning platform LEARN web page that was accessed by undergraduate students taking the HLTH110 Epidemiology course (65 students) and 22 completed the questionnaire. However, these were first year students taking a health-related course so the response may have been higher than could be expected for students in other courses or at advanced levels of study.

3.6.2 Data Collection

A random sampling approach was not possible because the complete enrolment lists of students were not available from the universities to allow this to happen. However, data were weighted to partially account for undersampling and oversampling.

The questionnaire comprised both a printed and an online copy and was distributed widely. Using online and printed questionnaires improved the chances of prospective participants becoming aware of the survey and participating. A single anonymous URL link was posted on Facebook pages of student associations across New Zealand (all universities in New Zealand have student associations, with a huge presence on social media particularly Facebook).
The online questionnaire was designed and distributed using Qualtrics, a survey and questionnaire tool recommended by UC.[7] Printed questionnaires were distributed to participants by research assistants (RAs) from respective universities. RAs were recruited through Student Job Search (SJS), a charitable organisation formed by student associations to help students of tertiary educational institutions in New Zealand find work.[8] The responses were posted to me (the researcher) in secure tracked packages.

3.6.3 Survey Measures

The questionnaire used in this research is included in **Appendix 9 (paper version) and Appendix 10 (online version)**. Participants were asked about their demographic characteristics, smoking, vaping, the Smokefree 2025 goal, thoughts and feelings during "the last month", and health in the previous 12 months. The questionnaire used previously validated items so the findings of the surveys could be compared with those from previous surveys. This thesis focuses on questions on smoking, vaping, the Smokefree 2025 goal and associations between history of mental illness (HMI) with smoking and vaping.

3.6.3.1 Demographic Characteristics

Respondents provided information on their age, gender, ethnicity, country of birth, years lived in New Zealand, and university where they were studying (**Appendix 9**). Age-specific analyses compared those aged <25 years with those aged ≥25 years. The <25 years age band was chosen to allow for comparisons with studies on smoking and/or vaping that have used similar age bands when investigating smoking,[9-15] and also for comparisons with UQ data.

Data weighting by gender and university size meant that respondents who either did not provide a valid university or who did not provide valid gender information were excluded from analyses. The ethnicity question was based on the New Zealand census question,[16] and responses were prioritised for Māori: all those who selected Māori were defined as Māori and those who did not select Māori were defined as non-Māori, similar to previous research.[17] Non-

Māori ethnicities were combined both for clarity and to compare with Māori, who have the highest smoking rates in New Zealand.[9] This approach has been used previously.[5 6 18]

Years lived in New Zealand (five or less) was used as a proxy for international students, to assess the representativeness of the sample to the general New Zealand university student population, as was the question about the university where participants were studying.

3.6.3.2 Tobacco Use

The question on ever smoking was adapted from the New Zealand Tobacco Use Survey (NZTUS),[19] the frequency of smoking question was adapted from Marsh and others[20] and the NZTUS,[19] time to smoking the first cigarette from the NZTUS[19] and the Fagerstrom Test for Nicotine Dependence (FTND),[21] and the question on quit smoking intentions from the NZTUS.[19]

Respondents who answered "Yes" to the question on ever smoking were defined as "ever smokers", those who reported smoking at least once a month or more frequently in response to the question on how often they smoked, were defined as "current smokers", consistent with previous research[22 23] and those who reported smoking at least once a day were defined as "daily smokers".

The responses for the question that asked how many cigarettes participants smoked per day ("1 to 5", "6 to 10", "11 to 20", "21 to 30", "31 or more", and "Don't know") were collapsed into, "1-5 cigarettes" and ">5 cigarettes" due to small numbers in the response categories above 5 cigarettes/day. Responses for the question on time to smoking the first cigarette ("Within 5 minutes", "5-30 minutes", "31-60 minutes", and ">60 minutes") were grouped into, "60 minutes or less" and "after more than 60 minutes" due to small numbers in the three response categories that fell within 60 minutes of waking. The responses for the question on how often participants smoked in indoor or outdoor smokefree spaces ("Never", "Almost never", "Sometimes", "Fairly often", and "Very often") were grouped into, "never/almost never" and "other" due to small numbers of those who said sometimes, fairly or very often. The responses for the question on planning to quit smoking ("Yes, within 30 days", "Yes, after 30 days but within 3 months", "Yes, but not within the next 3 months", and "No, I am not planning on giving up") were grouped into, "Yes, I plan to quit" and "Not planning to quit" for clarity. The responses for the question on ever trying to quit in the last 12 months were grouped into, "Yes"

and “No” and for the question on the number of serious attempts to quit smoking (“1-3”, “4-5”, and “More than 5”) was grouped into, “1-3 attempts” and “>3 attempts”, for clarity.
The following responses were used for the question that asked how participants’ smoking behaviour would change if the price of a packet of their regular cigarettes or roll-your own tobacco (RYO tobacco) was increased by $5.00, $10.00, $15.00 or >$15.00 were used (“I would smoke the same amount that I smoke today”, “I would smoke less than I smoke today, I would switch to other tobacco products”, “I would switch to electronic cigarette (e-cigarette)”, and “I would stop smoking altogether”).

All participants were asked to indicate how they agreed or disagreed with three statements regarding potentially new smokefree policies that New Zealand could consider. The first statement was adapted from the 2011 Health Sponsorship Council (HSC) report[24] and stated “Being smokefree is part of the New Zealand way of life”. The second statement was adapted from HSC[25] and Thomson and colleagues[26] and stated “The number of places allowed to sell cigarettes and tobacco should be reduced”. The third statement was adapted from Thomson and colleagues,[26] HSC[24 25] and Wilson and others[27] and stated “Cigarettes should no longer be sold in New Zealand in 10 years”. The response options for all statements were similar (“Strongly disagree”, “Disagree”, “Neutral”, “Agree”, and “Strongly agree”). These responses were grouped into two, “agree/strongly agree” and “other” for clarity.

3.6.3.3 E-cigarette Use

All questions in this section, except for those on use in smokefree spaces, were adapted from Pearson and others[28] and the following definitions were used:

- Respondents who answered “Yes” to the question, “Have you ever tried an e-cigarette or vaping device?” were defined as “ever vapers”.
- Respondents who reported vaping at least once a month or more frequently in response to the question “How often do you currently use an e-cigarette or vaping device?” were defined as “current vapers”, consistent with previous studies.[29-31] The response options for this question were “Daily or almost daily”, “Less than daily, but at least once a week”, “Less than weekly, but at least once a month”, “Less than monthly”, “Not at all”, and “Don't know”.
- Respondents who reported vaping at least once a day were defined as “daily vapers”.
- Responses to “How often do you vape/use an e-cigarette in indoor spaces where smoking is banned?” and “How often do you vape/use an e-cigarette in outdoor spaces where

smoking is banned?" were "Never", "Almost never", "Sometimes", "Fairly often", and "Very often". These were collapsed into two or three levels for clarity, or because of small numbers of respondents in some of the categories (i.e. "never/almost never" and "other" or "never/almost never", "sometimes" and "fairly often/very often").

- The primary reasons for vaping was tested with "What is (was) your primary reason for using an e-cigarette or vaping device?" and the three most common reasons ("to quit smoking", "for enjoyment" and "curiosity/just wanted to try them") were assessed.
- Use of e-cigarettes containing nicotine was tested with "Does the e-cigarette or vaping device that you use(d) most often contain(ed) nicotine?" and the options were "Yes", "No" and "Don't know" (these option was excluded from the analysis because of very small numbers).
- Perception of the harmfulness of e-cigarettes was assessed with "Compared with tobacco cigarettes, how harmful are e-cigarettes to a person's health?" and the response options were "Much less harmful than cigarettes", "Somewhat less harmful than cigarettes", "About the same as cigarettes", "Somewhat more harmful than cigarettes", "Much more harmful than cigarettes" and "Don't know". These were grouped into two levels ("less/much less harmful" and "other") for clarity.
- All participants were asked to indicate how they agreed or disagreed with three statements regarding vaping in public spaces. The first statement stated "If someone vapes around me they are causing me harm because of second-hand vapour". The second statement stated "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed". The third statement stated "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed". The response options for all statements were similar ("Strongly disagree", "Disagree", "Neutral", "Agree", and "Strongly agree"). These responses were grouped into two, "disagree/strongly disagree" and "other" for clarity.

3.6.3.4 The Smokefree 2025 goal

The question on the awareness of the Smokefree 2025 goal ("The New Zealand Government wants to reduce the proportion of people who smoke from around 16% (1 in 6) currently to less than 5% (1 in 20) by 2025. This is the Smokefree 2025 Goal. Before today, were you aware of this goal?" with response options as "Yes" and "No") was adapted from the Health Promotion Agency (HPA) reports.[32 33] The question on support for the Smokefree goal ("Do you support this goal?") was adapted from Gendall and others;[34] on achievability of the Smokefree goal

("Do you think this goal can be achieved?") was adapted from White (2013),[32] and the question on whether e-cigarettes/vaping can help achieve the Smokefree goal ("Do you think e-cigarettes/vaping can help achieve this goal?") was designed in-house. The response options for the three questions were "Definitely yes", "Somewhat yes", "Not really", "Definitely not" and "No opinion". These were grouped into two levels "definitely/somewhat yes" and "other" due to small numbers of the responses included in "other".

3.6.3.5 HMI

Participants were asked "Have you been diagnosed with or received treatment for any of the following medical conditions in the last 12 months? PLEASE SELECT ALL THAT APPLY", and the conditions were listed as: "Depression", "Anxiety or nervous disorder", "Other mental health condition", "Cancer, other than skin cancer", "Cardiovascular disease (e.g. heart disease, high blood pressure)", "Asthma", "Other chronic respiratory disease (e.g. chronic obstructive pulmonary disease)", "Diabetes", and "None of the above". Participants who selected "depression", "anxiety or nervous disorder", or "other mental health condition", were grouped together and defined as having a history of mental illness (HMI), while participants who selected "none of the above" were included in a comparison group of respondents without an HMI or any of the other listed medical conditions. This variable was used to assess the impact of an HMI on smoking and vaping behaviour and participants with other medical conditions were excluded from these assessments to minimise any potential impact from these conditions on observed associations.[35-37]

The definition of HMI used in this thesis is consistent with that used in my recent publication on the same topic.[38] However, only including respondents who had received a diagnosis or treatment in the last 12 months may have missed those who had not yet received a diagnosis or treatment for mental illness at the time of the survey.[38]

3.6.4 Data Analysis

In order for the sample to be more representative of the entire student population in all universities, each response was weighted. The calculation of weights required knowledge of the distribution of the relevant variable over the eight universities. For T1 data, weighting could be accomplished using both gender and university size, with data from the Ministry of

Education.[39] Each person was assigned a weight so that the adjusted joint sample distribution of gender and university matched that of the published population for all universities in 2018. At T2, data on the distribution of the relevant variables over the eight universities were not available. Each person was therefore assigned a weight so that the adjusted sample distributions of gender and university size matched those of the published population for all universities in 2018.

Internet protocol (IP) addresses were used to identify and remove duplicate entries prior to data analysis. Respondents who participated in T1 were also excluded from T2 because the surveys were conducted independently of each other and responses of participants who participated in both surveys could not be linked.

The following analyses were conducted:

- Descriptive statistics with associated 95% CIs.
- Chi-squared tests compared:
    - Smoking prevalence by age (<25 years vs ≥25 years), gender (male vs female) and ethnicity (Māori vs non-Māori).
    - Vaping prevalence by age, gender, ethnicity and smoking status (current smoker vs non-smoker). Non-smokers include never-smokers as well as ex-smokers and people who smoked less than once monthly.
    - Awareness of, support for, and thoughts about the Smokefree goal (achievability and potential role of e-cigarettes/vaping) by age, gender, ethnicity, smoking and vaping status (current vaper vs non-vaper). Non-vapers include never-vapers as well as people who vaped less than once monthly.
- Logistic regression analyses were done to investigate the relationships between a number of predictor variables (age, gender, and ethnicity) and outcome variables (current smoking, current vaping, HMI, and the Smokefree goal).

  Bivariate analyses were run to examine the association of vaping with smoking, and the association of history of mental illness (HMI) with smoking and vaping, controlling for age, gender, and ethnicity. Similar analyses were run to examine the relationship between responses to the Smokefree 2025 goal (i.e. awareness, support, achievability and role of e-cigarettes/vaping) and student characteristics (i.e. age, gender, ethnicity, current smoking, and current vaping).

The variables were coded as: current smoking (0 = No, 1 = Yes); current vaping (0 = No, 1 = Yes); age (0 = <25 years, 1 = ≥25 years); gender (0 = female, 1 = male); ethnicity (0 = Māori, 1 = non-Māori), and HMI (0 = No, 1 = Yes). Smokefree goal variables were coded as: awareness (0 = No, 1 = Yes); support (0 = "other", 1 = "definitely/somewhat yes"); belief that it can be achieved (0 = "other", 1 = "definitely/somewhat yes"), and belief that e-cigarettes/vaping can help to achieve it (0 = "other", 1 = "definitely/somewhat yes").

All statistical analyses were performed using IBM SPSS Statistics version 25 and two-sided $p<.05$ was considered to be statistically significant. All significance tests and prevalence estimates used weighted data.

3.7 The Australian Component

The Australian component was carried out by collaborating researchers from UQ, who were conducting a pre-implementation survey to provide baseline data for policy development prior to transitioning into a smokefree campus on 1st July, 2018.[40] Data were collected at one time point using a cross-sectional survey. Efforts were made to engage and potentially collaborate with other universities in Australia but were unsuccessful.

However, UQ students in the current sample were broadly representative of students in higher education in Australia[41] in terms of age (students aged <25 years: UQ 68.5%, Australia 58%) and gender (female students: UQ 60.4%, Australia 57.2%).

3.7.1 Sample Size

This component did not have a minimum required sample, rather the project targeted the wider UQ student population, at three campuses (plus external students) and a total of 5,172 students participated in the survey. Additional information is provided in **Section 3.7.4**.

3.7.2 The Questionnaire

Pre-agreed core questions on tobacco and e-cigarette use (**Appendix 12**) were included in the questionnaire used in Australia (**Appendix 11**).

3.7.3 Survey Measures

3.2.3.1 Demographic Characteristics

Information on participant age and gender was collected. The question about age asked "How old are you?" and the options were "Younger than 18 years", "18-24 years", "25-29 years", "30-34 years", "35-39 years", "40-44 years", "45-49 years", and "50 and over", while the question about gender asked "What is your gender?" and the options were: "Male", "Female", "Other", and "X (Indeterminate, Intersex, Unspecified)". Age- and gender-specific analyses followed the same structure described in Chapter 3.

3.7.3.2 Tobacco Use

Items in this section were coded in the same manner as described previously in this chapter (**Section 3.6.3.2**).

3.7.3.3 E-cigarette Use

Items in this section were coded in the same manner as described previously in this chapter (**Section 3.6.3.3**).

3.7.4 Data Collection

A cross-sectional survey was conducted in August - November 2017, among UQ students at three campuses (St Lucia, Herston, and Gatton), and external (distance learning) students.[40] Students across the university (all campuses) were invited by e-mail to participate in the survey, in addition to a university newsletter containing a link to the survey. Furthermore, some students were also approached on campus (by students on a work placement) and invited to complete the survey on handheld touchscreen devices.[40] The survey was administered online through the online platform "Checkbox®" and was hosted by the University of Queensland Wellness website (https://www.uq.edu.au/wellness-program/).[40] The estimated response rate for this survey was 10% of all enrolled students.[40] The questionnaire (**Appendix 11**) contained 37 questions, 20 of which were core questions (**Appendix 12**) also used in the NZ component (**Appendix 9**).

3.7.5 Data Analysis

The following analyses were conducted:

- Descriptive statistics were derived and proportions with associated 95% CIs.
- Chi-squared tests compared smoking prevalence by age (<25 years vs ≥25 years) and gender (male vs female), and vaping by age, gender, and smoking status (current smoker vs non-smoker).
- A logistic regression model was constructed to assess the association of vaping with smoking while controlling for age and gender. Associations involving HMI could not be assessed because the question about participant health in the previous 12 months did not include a vital response option "None of the above", which was required to allow for these analyses.

All statistical analyses were performed using IBM SPSS Statistic version 25 and two-sided $p<.05$ was considered to be statistically significant; 95% CIs were reported where appropriate.

Data weighting was not done because the calculation of weights required knowledge of the distribution of relevant variables (gender and age) but these variables were categorised differently in the current research compared with available data at UQ.[42]

3.8 References

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CHAPTER 4 – RESULTS (1)

This chapter provides findings of the NZ component. It describes the demographic characteristics of participants in each survey cycle and presents the results of smoking, vaping, attitudes towards the Smokefree 2025 goal, and participant health in the previous 12 months. In addition to this, the associations between smoking, vaping, the Smokefree goal and participant health are presented.

4.1 New Zealand – T1 survey

All tables following **Section 4.1.2** were produced from weighted counts and marginal totals may not always be exactly the sum of the component cells.

4.1.1 Demographic Characteristics

A total of 2,180 students participated in the first survey (T1) and 1,854 were included in the analysis (**Figure 4.1.1**); 898 (48.4%) completed the survey online and 956 (51.6%) on paper. **Table 4.1.1** summarises the demographic characteristics of participants while **Table 4.1.2** presents the weighted and unweighted numbers of participants, by university.

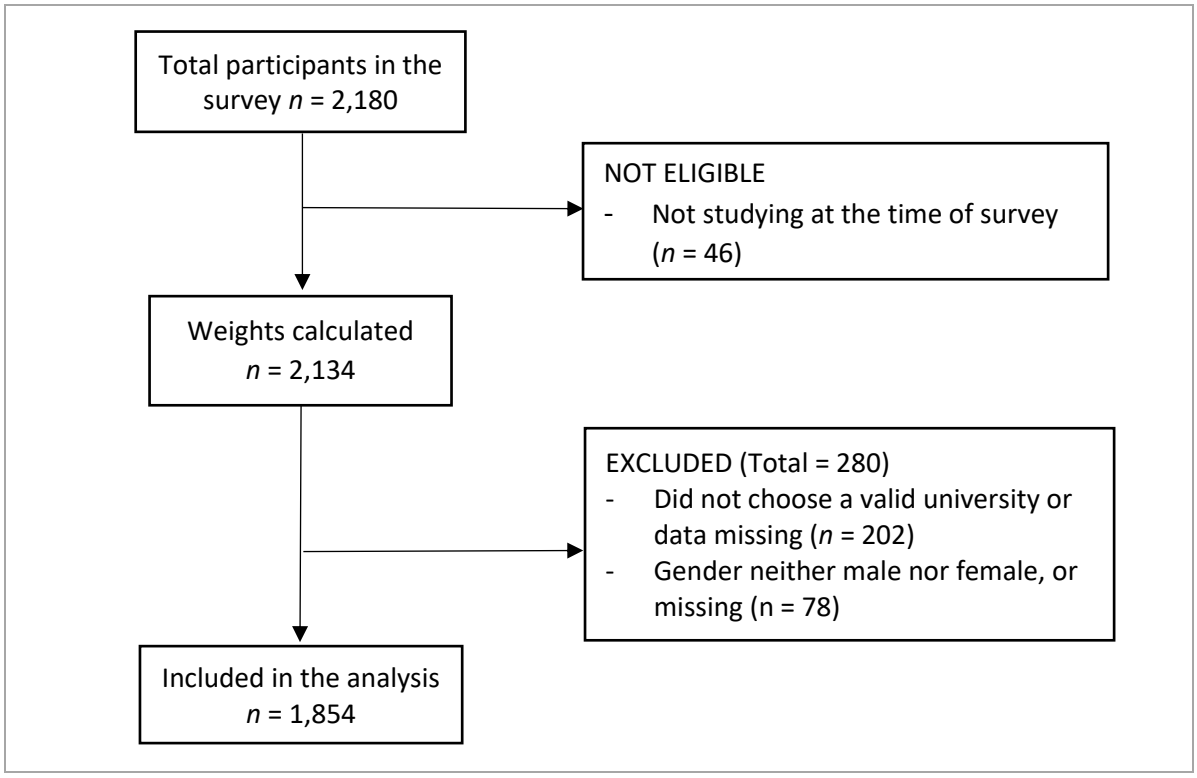


Figure 4.1. 1. Flowchart of the selection of participants included in this analysis.

Table 4.1. 1. The demographic characteristics of participants in T1

Variable	Sample (n = 1854) %
Age	
≤17 years	53 (2.9)
18-20 years	919 (49.6)
21-24 years	557 (30.0)
25-29 years	169 (9.1)
30-34 years	91 (4.9)
35-39 years	32 (1.7)
40-44 years	16 (0.9)
≥45 years	16 (0.9)
Missing age	1 (0.1)
Gender	
Male	740 (39.9)
Female	1114 (60.1)
Years lived in New Zealand	
Less than 1 year	203 (10.9)
1-5 years	279 (15.0)
6-10 years	131 (7.1)
More than 10 years	1235 (66.6)
Missing	6 (0.3)
Ethnicity	
NZ European	953 (51.4)
Māori	147 (7.9)
Samoan	68 (3.7)
Cook Island Māori	17 (0.9)
Tongan	29 (1.6)
Niuean	6 (0.3)
Chinese	273 (14.7)
Indian	121 (6.5)
Other	481 (25.9)
University	
Auckland University of Technology	81 (4.4)
Lincoln University	73 (3.9)
Massey University	233 (12.6)
University of Auckland	376 (20.3)
University of Canterbury	312 (16.8)
University of Otago	318 (17.2)
University of Waikato	196 (10.6)
Victoria University of Wellington	275 (14.8)
History of mental illness	
Yes	298 (16.1)
No	1325 (71.5)
Data missing	230 (12.4)

This table presents unweighted data. The percentages for ethnicity sum up to >100% because respondents could select more than one option.

Table 4.1. 2. Participants in T1, by university of origin.

	Unweighted	Weighted
Auckland University of Technology	81 (4.4)	286 (15.4)
Lincoln University	73 (3.9)	33 (1.8)
Massey University	233 (12.6)	318 (17.2)
University of Auckland	376 (20.3)	460 (24.8)
University of Canterbury	312 (16.8)	180 (9.7)
University of Otago	318 (17.2)	223 (12.0)
University of Waikato	196 (10.6)	142 (7.7)
Victoria University of Wellington	275 (14.8)	236 (12.7)

4.1.2 Tobacco Use

4.1.2.1 Tobacco Use; Overall

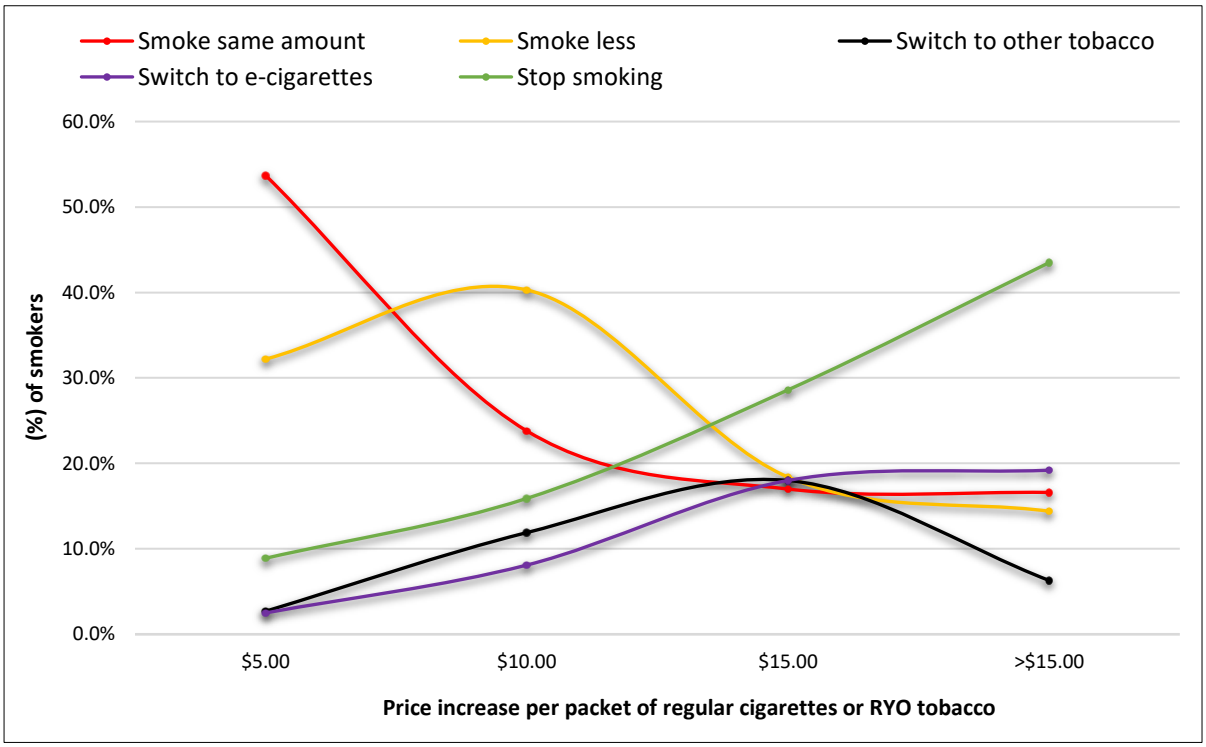
49.9% of the sample (95% CI = 47.6-52.2) reported ever smoking cigarettes or tobacco, 10.4% (95% CI = 9.1-11.9) currently smoked, and 5.6% (95% CI = 4.6-6.7) smoked at least once daily.

Of current smokers, 64.2% smoked 1-5 cigarettes/day and 35.8% smoked more than 5 cigarettes/day: 30.3% smoked their first cigarette within 60 minutes of waking up and 69.7% after more than 60 minutes of waking, 87.4% reported never or almost never smoking in indoor and 65.1% in outdoor spaces where smoking is banned, 68.7% planned to quit smoking 37.8% reported trying to quit smoking in the last 12-months, and 73.8% of those had made 1-3 serious attempts to quit smoking.

The smoking intentions of respondents on the basis of simulated price increases of their regular cigarettes or RYO tobacco of $5.00, $10.00, $15.00 or >$15.00 per packet are displayed in **Table 4.1.3 and Figure 4.1.2**. The proportion of respondents who indicated that they would continue to smoke the same amount that they currently smoked declined, while the proportion of respondents who reported that they would switch to e-cigarettes, or quit smoking, increased at all price levels.

Table 4.1. 3. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00

	$5.00	$10.00	$15.00	>$15.00
Smoke the same amount as today	53.7 (45.8-61.0)	23.8 (17.6-30.5)	17.0 (12.0-23.7)	16.6 (11.2-22.9)
Smoke less than today	32.2 (25.5-39.8)	40.3 (33.2-48.1)	18.4 (12.9-25.0)	14.4 (9.3-20.3)
Switch to other tobacco products	2.7 (0.9-6.5)	11.9 (7.5-17.5)	18.0 (12.4-24.3)	6.3 (3.3-11.3)
Switch to e-cigarettes	2.5 (0.6-5.7)	8.1 (4.4-12.8)	18.0 (12.4-24.3)	19.2 (13.8-26.2)
Stop smoking altogether	8.9 (5.3-14.3)	15.9 (10.7-21.9)	28.6 (22.1-36.1)	43.5 (36.0-51.3)
Total	**176 (100.0)**	**178 (100.0)**	**174 (100.0)**	**170 (100.0)**



To plot a linear scale, cigarette price indicated as >$15 is assumed to be $20.

Figure 4.1. 2. Change in smoking intentions following simulated cigarette price increases of $5, 10, 15 or >15 per packet of cigarettes or RYO tobacco.

Table 4.1.4 illustrates the responses of participants to three statements about potentially new smokefree policies for New Zealand. 50.7% of respondents agreed with the first statement "Being smokefree is part of the New Zealand way of life", 68.7% with the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced", and 53.0% with the third statement "Cigarettes should no longer be sold in New Zealand in 10 years".

Table 4.1. 4. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand.

	Agree/strongly agree	Other	Total
"Being smokefree is part of the New Zealand way of life."	924 (50.7, 48.4-53.0)	899 (49.3, 47.0-51.6)	1823 (100.0)
"The number of places allowed to sell cigarettes and tobacco should be reduced."	1244 (68.7, 66.6-70.9)	566 (31.3, 29.2-33.5)	1809 (100.0)
"Cigarettes should no longer be sold in New Zealand in 10 years."	961 (53.0, 50.7-55.4)	851 (47.0, 44.7-49.3)	1812(100.0)

Table 4.1.5 illustrates the responses of participants, by smoking status, to the three statements about potentially new smokefree policies for New Zealand. Current smokers were statistically significantly less likely than non-smokers to agree with all three statements: first statement (18.5% vs 54.2%, $p<.001$), second statement (25.7% vs 73.6%, $p<.001$), and third statement (21.3% vs 56.6%, $p<.001$).

Table 4.1. 5. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
Being Smokefree is part of the New Zealand way of life. (n=1823)	Agree/strongly agree	34 (18.5)	889 (54.2)	923 (50.6)	<.001
	Other†	150 (81.5)	750 (45.8)	900 (49.4)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1810)	Agree/strongly agree	47 (25.7)	1197 (73.6)	1244 (68.7)	<.001
	Other†	136 (74.3)	430 (26.4)	566 (31.3)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1812)	Agree/strongly agree	39 (21.3)	922 (56.6)	961 (53.0)	<.001
	Other†	144 (78.7)	707 (43.4)	851 (47.0)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.1.2.2 Tobacco use; by Age group

Statistically significantly more participants aged ≥25 years reported ever smoking (55.0% vs. 48.8%, $p=.040$), smoking the first cigarette within 60 minutes of waking (57.1% vs. 25.8%, $p=.001$), and trying to quit smoking (65.5% vs. 33.3%, $p=.001$) compared to participants aged <25 years (**Table 4.1.6**).

Table 4.1. 6. Smoking patterns of participants; by Age group

		<25 years	≥25 years	Total	*P-value*
Ever smoked? (n=1849)	Yes	738 (48.8)	186 (55.0)	924 (50.0)	.040
	No	773 (51.2)	152 (45.0)	925 (50.0)	
Currently smoke? (n=1853)	Yes	166 (11.0)	26 (7.6)	192 (10.4)	.069
	No	1347 (89.0)	314 (92.4)	1661 (89.6)	
Smoke at least daily? (n=1853)	Yes	86 (5.7)	17 (5.0)	103 (5.6)	.619
	No†	1427 (94.3)	323 (95.0)	1750 (94.4)	
Number of cigarettes/day in the past 30 days (n=195)	1-5 cigarettes	110 (64.7)	16 (64.0)	126 (64.6)	.945
	>5 cigarettes	60 (35.3)	9 (36.0)	69 (35.4)	
Time to first cigarette (n=206)	Within 60 minutes	46 (25.8)	16 (57.1)	62 (30.1)	.001
	After 60 minutes	132 (74.2)	12 (42.9)	144 (69.9)	
Smoking in indoor smokefree spaces (n=219)	Never/almost never	163 (86.2)	28 (93.3)	191 (87.2)	.280
	Other	26 (13.8)	2* (6.7)	28 (12.8)	
Smoking in outdoor smokefree spaces (n=219)	Never/almost never	121 (63.7)	22 (75.9)	143 (65.3)	.199
	Other	69 (36.3)	7 (24.1)	76 (34.7)	
Quit intentions (n=213)	Plans to quit	129 (70.1)	17 (58.6)	146 (68.5)	.216
	Not planning to quit	55 (29.9)	12 (41.4)	67 (31.5)	
Attempted to quit in the last 12 months? (n=218)	Yes	63 (33.3)	19 (65.5)	82 (37.6)	.001
	No	126 (66.7)	10 (34.5)	136 (62.4)	
Number of serious quit attempts in the last 12 months (n=76)	1-3 attempts	42 (72.4)	14 (77.8)	56 (73.7)	.652
	>3 attempts	16 (27.6)	4* (22.2)	20 (26.3)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who smoked at least weekly, monthly, and less than monthly.

The responses of participants on how their smoking will change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00, or >15.00, by age group, are shown in **Table 4.1.7**. Statistically significantly more participants aged <25 years reported that they would switch to e-cigarettes if the price of tobacco was increased by >$15.00 compared with participants aged ≥25 years (47.6% vs. 18.2%, *p*=.009).

Table 4.1. 7. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00; by Age group.

		<25 years	≥25 years	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=174)	Yes	4* (2.6)	0* (0.0)	4 (2.3)	.430
	Other†	147 (97.4)	23 (100.0)	170 (97.7)	
Stop smoking if price increased by $5.00? (n=175)	Yes	13 (8.6)	3* (12.5)	16 (9.1)	.539
	Other§	138 (91.4)	21 (87.5)	159 (90.9)	
Switch to e-cigarettes if price increased by $10.00? (n=177)	Yes	10 (6.5)	4* (16.7)	14 (7.9)	.087
	Other†	143 (93.5)	20 (83.3)	163 (92.1)	
Stop smoking if price increased by $10.00? (n=178)	Yes	28 (18.2)	1* (4.2)	29 (16.3)	.084
	Other§	126 (81.8)	23 (95.8)	149 (83.7)	
Switch to e-cigarettes if price increased by $15.00? (n=174)	Yes	28 (18.5)	4* (17.4)	32 (18.4)	.894
	Other†	123 (81.5)	19 (82.6)	142 (81.6)	
Stop smoking if price increased by $15.00? (n=173)	Yes	47 (31.1)	3* (13.6)	50 (28.9)	.091
	Other§	104 (68.9)	19 (86.4)	123 (71.1)	
Switch to e-cigarettes if price increased by >$15.00? (n=169)	Yes	70 (47.6)	4* (18.2)	74 (43.8)	.009
	Other†	77 (52.4)	18 (81.8)	95 (56.2)	
Stop smoking if price increased by >$15.00? (n=169)	Yes	28 (19.0)	5 (22.7)	33 (19.5)	.685
	Other§	119 (81.0)	17 (77.3)	136 (80.5)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, stop smoking altogether, and those who did not know how their smoking would change. §Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, switch to e-cigarettes, and those who did not know how their smoking would change.

Table 4.1.8 illustrates the responses of participants, by age group, to three statements about potentially new smokefree policies for New Zealand. There were no statistically significant differences in the responses based on age.

Table 4.1. 8. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Age group

		<25 years	≥25 years	Total	*P-value*
Being Smokefree is part of the New Zealand way of life. (n=1822)	Agree/strongly agree	741 (49.8)	182 (54.5)	923 (50.7)	.121
	Other*	747 (50.2)	152 (45.5)	899 (49.3)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1808)	Agree/strongly agree	1016 (69.0)	227 (67.8)	1243 (68.8)	.665
	Other*	457 (31.0)	108 (32.2)	565 (31.3)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1811)	Agree/strongly agree	784 (53.1)	177 (52.8)	961 (53.1)	.926
	Other*	692 (46.9)	158 (47.2)	850 (46.9)	

*Includes those who were neutral, disagreed, strongly disagreed, or had no opinion.

4.1.2.3 Tobacco Use; by Gender

Statistically significantly more males than females reported ever smoking (59.0% vs. 43.5%, $p<.001$), currently smoking (15.8% vs. 6.6%, $p<.001$) and smoking at least once a day (8.9% vs. 3.1%, $p<.001$) (**Table 4.1.9**).

Table 4.1. 9. Smoking patterns of participants; by Gender

		Male	Female	Total	*P-value*
Ever smoked? (n=1850)	Yes	456 (59.0)	469 (43.5)	925 (50.0)	<.001
	No	317 (41.0)	608 (56.5)	925 (50.0)	
Currently smoke? (n=1854)	Yes	122 (15.8)	71 (6.6)	193 (10.4)	<.001
	No	652 (84.2)	1009 (93.4)	1661 (89.6)	
Smoke at least daily? (n=1854)	Yes	69 (8.9)	34 (3.1)	103 (5.6)	<.001
	No*	705 (91.1)	1046 (96.9)	1751 (94.4)	
Number of cigarettes/day in the past 30 days (n=195)	1-5 cigarettes	73 (60.8)	52 (69.3)	125 (64.1)	.229
	>5 cigarettes	47 (39.2)	23 (30.7)	70 (35.9)	
Time to first cigarette (n=207)	Within 60 minutes	42 (32.3)	21 (27.3)	63 (30.4)	.447
	After 60 minutes	88 (67.7)	56 (72.7)	144 (69.6)	
Smoking in indoor smokefree spaces (n=220)	Never/almost never	114 (85.7)	78 (89.7)	192 (87.3)	.391
	Other	19 (14.3)	9 (10.3)	28 (12.7)	
Smoking in outdoor smokefree spaces (n=218)	Never/almost never	81 (60.9)	61 (71.8)	142 (65.1)	.101
	Other	52 (39.1)	24 (28.2)	76 (34.9)	
Quit intentions (n=215)	Plans to quit	90 (66.7)	58 (72.5)	148 (68.8)	.372
	Not planning to quit	45 (33.3)	22 (27.5)	67 (31.2)	
Attempted to quit in the last 12 months? (n=219)	Yes	47 (35.6)	36 (41.4)	83 (37.9)	.389
	No	85 (64.4)	51 (58.6)	136 (62.1)	
Number of serious attempts to stop smoking in the last 12 months (n=77)	1-3 attempts	32 (66.7)	25 (86.2)	57 (74.0)	.058
	>3 attempts	16 (33.3)	4 (13.8)	20 (26.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.
*Includes those who smoked at least weekly, monthly, and less than monthly.

The responses of participants on how their smoking will change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00, by gender, are shown in **Table 4.1.10**. Statistically significantly more males than females reported they would stop smoking if the price was increased by >$15.00 (24.8% vs. 11.6%, $p=.033$).

Table 4.1. 10. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00; by Gender.

		Male	Female	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=177)	Yes	3* (2.9)	2* (2.7)	5 (2.8)	.954
	Other†	101 (97.1)	71 (97.3)	172 (97.2)	
Stop smoking if price increased by $5.00? (n=176)	Yes	9 (8.7)	7 (9.6)	16 (9.1)	.847
	Other§	94 (91.3)	66 (90.4)	160 (90.9)	
Switch to e-cigarettes if price increased by $10.00? (n=179)	Yes	12 (11.2)	3* (4.2)	15 (8.4)	.095
	Other†	95 (88.8)	69 (95.8)	164 (91.6)	
Stop smoking if price increased by $10.00? (n=177)	Yes	13 (12.3)	15 (21.1)	28 (15.8)	.113
	Other§	93 (87.7)	56 (78.9)	149 (84.2)	
Switch to e-cigarettes if price increased by $15.00? (n=173)	Yes	23 (22.5)	8 (11.3)	31 (17.9)	.057
	Other†	79 (77.5)	63 (88.7)	142 (82.1)	
Stop smoking if price increased by $15.00? (n=174)	Yes	24 (23.3)	26 (36.6)	50 (28.7)	.056
	Other§	79 (76.7)	45 (63.4)	124 (71.3)	
Switch to e-cigarettes if price increased by >$15.00? (n=170)	Yes	39 (38.6)	35 (50.7)	74 (43.5)	.118
	Other†	62 (61.4)	34 (49.3)	96 (56.5)	
Stop smoking if price increased by >$15.00? (n=170)	Yes	25 (24.8)	8 (11.6)	33 (19.4)	.033
	Other§	76 (75.2)	61 (88.4)	137 (80.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, stop smoking altogether, and those who did not know how their smoking would change. §Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, switch to e-cigarettes, and those who did not know how their smoking would change.

Table 4.1.11 illustrates the responses of participants, by gender, to three statements about potentially new smokefree policies for New Zealand. Statistically significantly more females than males agreed with the first statement "Being smokefree is part of the New Zealand way of life" (52.9% vs. 47.6%, p=.024), the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced" (73.1% vs. 62.5%, p<.001) and the third statement "Cigarettes should no longer be sold in New Zealand in 10 years" (56.3% vs. 48.5%, p=.001).

Table 4.1. 11. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Gender

		Male	Female	Total	*P-value*
"Being Smokefree is part of the New Zealand way of life." (n=1823)	Agree/strongly agree	362 (47.6)	562 (52.9)	924 (50.7)	.024
	Other*	399 (52.4)	500 (47.1)	899 (49.3)	
"The number of places allowed to sell cigarettes and tobacco should be reduced." (n=1810)	Agree/strongly agree	471 (62.5)	773 (73.1)	1244 (68.7)	<.001
	Other*	282 (37.5)	284 (26.9)	566 (31.3)	
"Cigarettes should not be sold in New Zealand in 10 years." (n=1812)	Agree/strongly agree	366 (48.5)	595 (56.3)	961 (53.0)	.001
	Other*	389 (51.5)	462 (43.7)	851 (47.0)	

*Includes: strongly disagree, disagree, neutral and no opinion.

4.1.2.4 Tobacco Use; by Ethnicity

Statistically significant differences between Māori and non-Māori were only seen in ever smoking: Māori 71.0% vs. non-Māori 48.3%, $p<.001$ (**Table 4.1.12**).

Table 4.1. 12. Smoking patterns of participants; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
Ever smoked? (n=1850)	Yes	98 (71.0)	827 (48.3)	925 (50.0)	<.001
	No	40 (29.0)	885 (51.7)	925 (50.0)	
Currently smoke? (n=1853)	Yes	17 (12.4)	176 (10.3)	193 (10.4)	.427
	No	120 (87.6)	1540 (89.7)	1660 (89.6)	
Smoke at least daily? (n=1854)	Yes	9 (6.5)	94 (5.5)	103 (5.6)	.607
	No†	129 (93.5)	1622 (94.5)	1751 (94.4)	
Number of cigarettes/day in the last 30 days (n=195)	1-5 cigarettes	11 (61.1)	114 (64.4)	125 (64.1)	.781
	>5 cigarettes	7 (38.9)	63 (35.6)	70 (35.9)	
Time to first cigarette (n=208)	Within 60 minutes	9 (45.0)	54 (28.7)	63 (30.3)	.132
	After 60 minutes	11 (55.0)	134 (71.3)	145 (69.7)	
Smoking in indoor smokefree spaces (n=219)	Never/almost never	20 (95.2)	171 (86.4)	191 (87.2)	.247
	Other	1* (4.8)	27 (13.6)	28 (12.8)	
Smoking in outdoor smokefree spaces (n=219)	Never/almost never	11 (52.4)	132 (66.7)	143 (65.3)	.191
	Other	10 (47.6)	66 (33.3)	76 (34.7)	
Quit intentions (n=214)	Plans to quit	15 (75.0)	132 (68.0)	147 (68.7)	.523
	Not planning to quit	5 (25.0)	62 (32.0)	67 (31.3)	
Attempted to quit in the last 12 months? (n=219)	Yes	10 (47.6)	73 (36.9)	83 (37.9)	.334
	No	11 (52.4)	125 (63.1)	136 (62.1)	
Number of serious quit attempts in the last 12 months (n=78)	1-3 attempts	9 (90.0)	48 (70.6)	57 (73.1)	.196
	>3 attempts	1* (10.0)	20 (29.4)	21 (26.9)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.

*Expected count less than 5. †Includes those who smoked at least weekly, monthly, and less than monthly.

Table 4.1.13 illustrates the responses of participants, by ethnicity, on how their smoking would likely change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00, or >15.00t. There were no statistically significant differences between Māori and non-Māori.

Table 4.1. 13. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=156)	Yes	0* (0.0)	4* (2.6)	4 (2.3)	.480
	Other†	19 (100.0)	152 (97.4)	171 (97.7) 175 (100.0)	
Stop smoking if price increased by $5.00? (n=157)	Yes	2* (10.5)	14 (8.9)	16 (9.1)	.818
	Other§	17 (89.5)	143 (91.1)	160 (90.9)	
Switch to e-cigarettes if price increased by $10.00? (n=179)	Yes	1* (5.0)	14 (8.8)	15 (8.4)	.563
	Other†	19 (95.0)	145 (91.2)	164 (91.6)	
Stop smoking if price increased by $10.00? (n=178)	Yes	4* (20.0)	24 (15.2)	28 (15.7)	.578
	Other§	16 (80.0)	134 (84.8)	150 (84.3)	
Switch to e-cigarettes if price increased by $15.00? (n=174)	Yes	4* (21.1)	27 (17.4)	31 (17.8)	.696
	Other†	15 (78.9)	128 (82.6)	143 (82.2)	
Stop smoking if price increased by $15.00? (n=174)	Yes	4* (21.1)	46 (29.7)	50 (28.7)	.433
	Other§	15 (78.9)	109 (70.3)	124 (71.3)	
Switch to e-cigarettes if price increased by >$15.00? (n=170)	Yes	7 (36.8)	67 (44.4)	74 (43.5)	.533
	Other†	12 (63.2)	84 (55.6)	96 (56.5)	
Stop smoking if price increased by >$15.00? (n=170)	Yes	4* (21.1)	29 (19.2)	33 (19.4)	.848
	Other§	15 (78.9)	122 (80.8)	137 (80.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who said would smoke the same amount as they currently smoked, smoke less than they currently smoked, switch to other tobacco products, stop smoking altogether, and those who did not know what they would do. §Includes those who said they would smoke the same amount as they currently smoked, smoke less than they currently smoked, switch to other tobacco products, switch to e-cigarettes, and those who did not know what they would do.

Table 4.1.14 illustrates the responses of participants, by ethnicity, to three statements about potentially new smokefree policies for New Zealand. There were no statistically significant differences between Māori and non-Māori.

Table 4.1. 14. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
Being smokefree is part of the New Zealand way of life. (n=1822)	Agree/strongly agree	62 (47.3)	861 (50.9)	923 (50.7)	.429
	Other*	69 (52.7)	830 (49.1)	899 (49.3)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1810)	Agree/strongly agree	84 (64.1)	1160 (69.1)	1244 (68.7)	.238
	Other*	47 (35.9)	519 (30.9)	566 (31.3)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1812)	Agree/strongly agree	75 (56.8)	886 (52.7)	961 (53.0)	.366
	Other*	57 (43.2)	794 (47.3)	851 (47.0)	

*Includes those who strongly disagreed, disagreed, were neutral or had no opinion.

4.1.3 E-cigarette Use

4.1.3.1 E-cigarette Use; Overall

37.0% of the sample (95% CI = 34.8-39.2) reported ever vaping, 6.5% (95% CI = 5.4-7.7) currently vaped, and 2.5% (95% CI = 1.9-3.4) vaped daily or almost daily. Of vapers, 79.6% reported never/almost never vaped in indoor, and 71.3% in outdoor smokefree spaces; 6.2% vaped to quit smoking, 13.4% for enjoyment, 63.7% out of curiosity/just wanted to try them and the rest for other reasons; 15.8% vaped daily for a month or more, and 80.3% used nicotine. Of all respondents, 75.3% thought e-cigarettes were less harmful (less or much less harmful) than tobacco cigarettes: 70.4% of the sample responded.

Table 4.1.15 shows the responses of participants regarding three statements about e-cigarette use. 30.6% of respondents disagreed with the first statement "If someone vapes around me they are causing me harm because of second-hand vapour", 74.2% disagreed with the second statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed" and 54.5% disagreed with the third statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed."

Table 4.1. 15. Thoughts of participants on three statements about e-cigarette use

	Disagree/strongly disagree	Other*	Total
If someone vapes around me they are causing me harm because of second-hand vapour	557 (30.6, 28.5-32.8)	1264 (69.4, 67.2-71.5)	1821 (100.0)
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed	1345 (74.2, 72.1-76.2)	468 (25.8, 23.8-27.9)	1813 (100.0)
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed	985 (54.5, 52.2-56.8)	822 (45.5, 43.2-47.8)	1807 (100.0)

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.1.3.2 E-cigarette Use; by Age group

Statistically significantly more participants aged <25 years than those aged ≥25 years ever vaped (39.8% vs. 27.8%, p<.001), and vaped out of curiosity (67.3% vs. 43.1%, p<.001), while significantly more participants aged ≥25 than those aged <25 vaped daily or almost daily (6.8% vs. 1.6%, p<.001), vaped to quit smoking (29.2% vs. 2.4%, p<.001), vaped daily for a month or more (41.3% vs. 11.4%, p<.001), and used nicotine-containing devices (96.6% vs. 70.7%, p=.005) (**Table 4.1.16**).

Table 4.1. 16. E-cigarette use behaviour, reasons for use and perceptions of harm; by age group

			<25 years	**≥25 years**	**Total**	***P-value***
Use behaviour	Ever use (n=1823)	Yes	592 (39.8)	93 (27.8)	685 (37.6)	<.001
		No	897 (60.2)	241 (72.2)	1138 (62.4)	
	Current use (n=1853)	Yes	90 (5.9)	29 (8.5)	119 (6.4)	.079
		No	1423 (94.1)	311 (91.5)	1734 (93.6)	
	Daily use (n=1853)	Yes	24 (1.6)	23 (6.8)	47 (2.5)	<.001
		No	1489 (98.4)	317 (93.2)	1806 (97.5)	
	Daily use for a month or more (n=512)	Yes	50 (11.4)	31 (41.3)	81 (15.8)	<.001
		No	387 (88.6)	44 (58.7)	431 (84.2)	
	Use of nicotine (n=76)	Yes	33 (70.2)	28 (96.6)	61 (80.3)	.005
		No	14 (29.8)	1* (3.4)	15 (19.7)	
	Use in indoor smokefree spaces (n=323)	No	218 (80.1)	39 (76.5)	257 (79.6)	.550
		Other†	54 (19.9)	12 (23.5)	66 (20.4)	
	Use in outdoor smokefree spaces (n=320)	No	197 (73.2)	32 (62.7)	229 (71.6)	.128
		Other†	72 (26.8)	19 (37.3)	91 (28.4)	
Reasons for use	To quit smoking (n=497)	Yes	10 (2.4)	21 (29.2)	31 (6.2)	<.001
		No	415 (97.6)	51 (70.8)	466 (93.8)	
	For enjoyment (n=497)	Yes	63 (14.8)	3* (4.2)	66 (13.3)	.014
		No	362 (85.2)	69 (95.8)	431 (86.7)	
	Curiosity/just wanted to try them (n=497)	Yes	286 (67.3)	31 (43.1)	317 (63.8)	<.001
		No	139 (32.7)	41 (56.9)	180 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1304)	Yes	818 (76.4)	164 (70.4)	982 (75.3)	.055
		Other§	253 (23.6)	69 (29.6)	322 (24.7)	

Note: the cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Expected count less than 5. †Includes sometimes, fairly often and very often. §Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Table 4.1.17 shows how participants responded to the three statements about vaping, by age group; statistically significant differences were only seen on the first statement where significantly more participants aged <25 years than those aged ≥25 years disagreed with the statement (32.6% vs. 21.6%, *p*<.001).

Table 4.1. 17. Disagreement with the three statements about vaping; by Age group

		<25 years	**≥25 years**	**Total**	***P-value***
If someone vapes around me they are causing me harm because of second-hand vapour. (n=1820)	Disagree/strongly disagree	485 (32.6)	72 (21.6)	557 (30.6)	<.001
	Other*	1002 (67.4)	261 (78.4)	1263 (69.4)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed. (n=1812)	Disagree/strongly disagree	1100 (74.4)	245 (73.6)	1345 (74.2)	.763
	Other*	379 (25.6)	88 (26.4)	467 (25.8)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed. (n=1807)	Disagree/strongly disagree	803 (54.3)	183 (55.6)	986 (54.6)	.670
	Other*	675 (45.7)	146 (44.4)	821 (45.4)	

*Includes those who were neutral, agreed, strongly agreed or had no opinion.

4.1.3.3 E-cigarette use; by Gender

Statistically significantly more males than females reported ever vaping (47.6% vs. 30.5%, *p*<.001), current vaping (9.0% vs. 4.5%, *p*<.001), vaping daily or almost daily (4.1% vs. 1.3%, *p*<.001), vaping daily for a month or more (19.6% vs. 11.4%, *p*=.010), and that e-cigarettes were less harmful compared with tobacco cigarettes (79.6% vs. 72.2%, *p*=.002) (**Table 4.1.18**).

Table 4.1. 18. E-cigarette use behaviour, reasons for use and perceptions of harm; by gender

			Male	Female	Total	*P-value*
Use behaviour	Ever use (n=1824)	Yes	361 (47.6)	325 (30.5)	686 (37.6)	<.001
		No	397 (52.4)	741 (69.5)	1138 (62.4)	
	Current use (n=1853)	Yes	70 (9.0)	49 (4.5)	119 (6.4)	<.001
		No	704 (91.0)	1030 (95.5)	1734 (93.6)	
	Daily use (n=1853)	Yes	32 (4.1)	14 (1.3)	46 (2.5)	<.001
		No	742 (95.9)	1065 (98.7)	1807 (97.5)	
	Daily use for a month or more (n=512)	Yes	54 (19.7)	26 (10.9)	80 (15.6)	.006
		No	220 (80.3)	212 (89.1)	432 (84.4)	
	Use of nicotine (n=76)	Yes	44 (84.6)	17 (70.8)	61 (80.3)	.161
		No	8 (15.4)	7 (29.2)	15 (19.7)	
	Use in indoor smokefree spaces (n=323)	No	140 (78.7)	117 (80.7)	257 (79.6)	.651
		Other*	38 (21.3)	28 (19.3)	66 (20.4)	
	Use in outdoor smokefree spaces (n=320)	No	126 (72.0)	102 (70.3)	228 (71.3)	.745
		Other*	49 (28.0)	43 (29.7)	92 (28.7)	
Reasons for use	To quit smoking (n=498)	Yes	19 (7.1)	12 (5.2)	31 (6.2)	.401
		No	250 (92.9)	217 (94.8)	467 (93.8)	
	For enjoyment (n=498)	Yes	39 (14.6)	28 (12.2)	67 (13.5)	.438
		No	229 (85.4)	202 (87.8)	431 (86.5)	
	Curiosity/just wanted to try them (n=497)	Yes	164 (61.2)	153 (66.8)	317 (63.8)	.194
		No	104 (38.8)	76 (33.2)	180 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1305)	Yes	434 (79.6)	549 (72.2)	983 (75.3)	.002
		Other†	111 (20.4)	211 (27.8)	322 (24.7)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes sometimes, fairly often and very often. †Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Table 4.1.19 shows the responses to the three statements about vaping, by gender. Statistically significantly more males than females disagreed with the first statement (34.4% vs. 27.8%, p=.003), while more females than males disagreed with the second (77.2% vs. 70.0%, p=.001) and third statements (58.4% vs. 49.1%, p<.001).

Table 4.1. 19. Disagreement with the three statements about vaping; by Gender

		Male	Female	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour (n=1821)	Disagree/strongly disagree	261 (34.4)	296 (27.8)	557 (30.6)	.003
	Other*	497 (65.6)	767 (72.2)	1264 (69.4)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1813)	Disagree/strongly disagree	530 (70.0%)	815 (77.2%)	1345 (74.2%)	.001
	Other*	227 (30.0%)	241 (22.8%)	468 (25.8%)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1806)	Disagree/strongly disagree	371 (49.1)	614 (58.4)	985 (54.5)	<.001
	Other*	384 (50.9)	437 (41.6)	821 (45.5)	

*Includes those who were neutral, agreed or strongly agreed.

4.1.3.4 E-cigarette Use; by Ethnicity

Statistically significantly more Māori than non-Māori participants reported ever vaping (51.9% vs. 36.5%, p<.001) and daily or almost daily vaping (5.8% vs. 2.3%, p=.011) (**Table 4.1.20**).

Table 4.1. 20. E-cigarette use behaviour, reasons for use and perceptions of harm; by ethnicity

			Māori	Non-Māori	Total	*P-value*
Use behaviour	Ever use (n=1824)	Yes	70 (51.9)	616 (36.5)	686 (37.6)	<.001
		No	65 (48.1)	1073 (63.5)	1138 (62.4)	
	Current use (n=1855)	Yes	13 (9.4)	107 (6.2)	120 (6.5)	.143
		No	125 (90.6)	1610 (93.8)	1735 (93.5)	
	Daily use (n=1854)	Yes	8 (5.8)	39 (2.3)	47 (2.5)	.011
		No	130 (94.2)	1677 (97.7)	1807 (97.5)	
	Daily use for a month or more (n=514)	Yes	9 (18.0)	72 (15.5)	81 (15.8)	.647
		No	41 (82.0)	392 (84.5)	433 (84.2)	
	Use of nicotine (n=76)	Yes	8 (88.9)	53 (79.1)	61 (80.3)	.489
		No	1* (11.1)	14 (20.9)	15 (19.7)	
	Use in indoor smokefree spaces (n=323)	No	32 (78.0)	225 (79.8)	257 (79.6)	.796
		Other†	9 (22.0)	57 (20.2)	66 (20.4)	
	Use in outdoor smokefree spaces (n=321)	No	28 (70.0)	201 (71.5)	229 (71.3)	.841
		Other†	12 (30.0)	80 (28.5)	92 (28.7)	
Reasons for use	To quit smoking (n=498)	Yes	6 (12.5)	25 (5.6)	31 (6.2)	.058
		No	42 (87.5)	425 (94.4)	467 (93.8)	
	For enjoyment (n=498)	Yes	8 (16.7)	59 (13.1)	67 (13.5)	.493
		No	40 (83.3)	391 (86.9)	431 (86.5)	
	Curiosity/just wanted to try them (n=497)	Yes	29 (60.4)	288 (64.0)	317 (63.7)	.624
		No	19 (39.6)	162 (36.0)	181 (36.3)	
Perceptions of harm	Less harmful than cigarettes (n=1305)	Yes	78 (77.2)	905 (75.2)	983 (75.3)	.644
		Other§	23 (22.8)	299 (24.8)	322 (24.7)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Expected count less than 5. †Includes sometimes, fairly often and very often. §Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes, and don't know.

Table 4.1.21 shows how participants responded to the three statements about vaping. Statistically significantly more Māori than non-Māori disagreed with the first statement (54.8% vs. 28.6%, $p<.001$), while significantly more non-Māori disagreed with the second statement (74.8% vs. 66.9%, $p=.047$); the difference in the disagreement with the third statement was not statistically significant (Māori 46.6% vs non-Māori 55.1%, $p=.058$).

Table 4.1. 21. Disagreement with the three statements about vaping; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour (n=1821)	Disagree/strongly disagree	74 (54.8)	483 (28.6)	557 (30.6)	<.001
	Other*	61 (45.2)	1203 (71.4)	1264 (69.4)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1813)	Disagree/strongly disagree	89 (66.9)	1256 (74.8)	1345 (74.2)	.047
	Other*	44 (33.1)	424 (25.2)	468 (25.8)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1807)	Disagree/strongly disagree	62 (46.6)	923 (55.1)	985 (54.5)	.058
	Other*	71 (53.4)	751 (44.9)	822 (45.5)	

***** Includes those who were neutral, agreed or strongly agreed.

4.1.3.5 E-cigarette Use; by Smoking Status

Statistically significantly more current smokers ever vaped (72.3% vs. 33.7%, $p<.001$), currently vaped (17.1% vs. 5.2%, $p<.001$), vaped daily or almost daily (7.8% vs. 1.9%, $p<.001$), and vaped daily for a month or more (25.9% vs. 12.9%, $p=.001$), while significantly more non-smokers reported never/almost never vaping in indoor (83.0% vs. 69.5%, $p=.009$) or in outdoor (75.4% vs. 59.3%, $p=.005$) smokefree spaces, and vaped out of curiosity (68.0% vs. 47.7%, $p<.001$) (**Table 4.1.22**).

Table 4.1. 22. E-cigarette use behaviour, reasons for use and perceptions of harm; by smoking status

			Current smoker	Non-smoker*	Total	*P-value*
Use behaviour	Ever use (n=1824)	Yes	133 (72.3)	553 (33.7)	686 (37.6)	<.001
		No	51 (27.7)	1087 (66.3)	1138 (62.4)	
	Current use (n=1854)	Yes	33 (17.1)	87 (5.2)	120 (6.5)	<.001
		No	160 (82.9)	1574 (94.8)	1734 (93.5)	
	Daily use (n=1853)	Yes	15 (7.8)	31 (1.9)	46 (2.5)	<.001
		No	178 (92.2)	1629 (98.1)	1807 (97.5)	
	Daily use for a month or more (n=514)	Yes	29 (25.9)	52 (12.9)	81 (15.8)	.001
		No	83 (74.1)	350 (87.1)	433 (84.2)	
	Use of nicotine (n=76)	Yes	24 (92.3)	37 (74.0)	61 (80.3)	.057
		No	2† (7.7)	13 (26.0)	15 (19.7)	
	Use in indoor smokefree spaces (n=323)	No	57 (69.5)	200 (83.0)	257 (79.6)	.009
		Other§	25 (30.5)	41 (17.0)	66 (20.4)	
	Use in outdoor smokefree spaces (n=321)	No	48 (59.3)	181 (75.4)	229 (71.3)	.005
		Other§	33 (40.7)	59 (24.6)	92 (28.7)	
Reasons for use	To quit smoking (n=498)	Yes	10 (9.3)	21 (5.4)	31 (6.2)	.132
		No	97 (90.7)	370 (94.6)	467 (93.8)	
	For enjoyment (n=498)	Yes	14 (13.1)	53 (13.6)	67 (13.5)	.899
		No	93 (86.9)	338 (86.4)	431 (86.5)	
	Curiosity/just wanted to try them (n=498)	Yes	51 (47.7)	266 (68.0)	317 (63.7)	<.001
		No	56 (52.3)	125 (32.0)	181 (36.3)	
Perceptions of harm	Less harmful than cigarettes (n=1306)	Yes	97 (73.5)	887 (75.6)	984 (75.3)	.601
		Other‡	35 (26.5)	287 (24.4)	322 (24.7)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes never smokers and smokers who smoke less than once a month. †Expected cell count less than 5. §Includes sometimes, fairly often and very often. ‡Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes, and don't know.

Table 4.1.23 shows how participants responded to the three statements about vaping. Statistically significantly more current smokers than non-smokers disagreed with the first statement (55.7% vs. 27.8%, $p<.001$), while significantly more non-smokers disagreed with the second statement (76.5% vs. 53.0%, $p<.001$), and the third statement (56.7% vs. 35.0%, $p<.001$) (**Table 4.1.23**).

Table 4.1. 23. Disagreement with the three statements about vaping; by Smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
If someone vapes around me they are causing me harm because of second-hand vapour (n=1822)	Disagree/strongly disagree	102 (55.7)	455 (27.8)	557 (30.6)	<.001
	Other†	81 (44.3)	1184 (72.2)	1265 (69.4)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1813)	Disagree/strongly disagree	96 (53.0)	1249 (76.5)	1345 (74.2)	<.001
	Other†	85 (47.0)	383 (23.5)	468 (25.8)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1806)	Disagree/strongly disagree	63 (35.0)	922 (56.7)	985 (54.5)	<.001
	Other†	117 (65.0)	704 (43.3)	821 (45.5)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, agreed or strongly agreed.

4.1.4 The Smokefree 2025 goal

4.1.4.1 Smokefree 2025; Overall

Of all respondents, 43.3% (95% CI = 41.0-45.6) were aware of the Smokefree 2025 goal before completing the survey, 95.5% (95% CI = 94.4-96.4) supported the goal, 87.3% (95% CI = 85.4-89.1) thought the goal can be achieved, and 85.4% (95% CI = 83.4-87.2) thought e-cigarettes/vaping can help achieve it.

4.1.4.2 Smokefree 2025; by Age group

Statistically significantly more participants aged <25 years than those aged ≥25 years thought e-cigarettes/vaping can help achieve the Smokefree goal (86.9% vs. 78.3%, *p*=.001) (**Table 4.1.24**).

Table 4.1. 24. Awareness of, support and thoughts on the Smokefree goal; by Age group

		<25 years	≥25 years	Total	*P-value*
Before today, were you aware of this goal? (n=1801)	Yes	669 (45.5)	134 (40.5)	803 (44.6)	.096
	No	801 (54.5)	197 (59.5)	998 (55.4)	
Do you support this goal? (n=1665)	Definitely/somewhat yes	1309 (95.9)	282 (94.0)	1591 (95.6)	.149
	Other*	56 (4.1)	18 (6.0)	74 (4.4)	
Do you think this goal can be achieved? (n=1319)	Definitely/somewhat yes	931 (87.5)	222 (87.1)	1153 (87.4)	.849
	Other*	133 (12.5)	33 (12.9)	166 (12.6)	
Do you think e-cigarettes/vaping can help achieve this goal? (n=1364)	Definitely/somewhat yes	977 (86.9)	188 (78.3)	1165 (85.4)	.001
	Other*	147 (13.1)	52 (21.7)	199 (14.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells.

*Includes those who said not really, definitely not, and no opinion.

4.1.4.3 Smokefree 2025; by Gender

Statistically significantly more females than males thought the goal can be achieved (89.3% vs. 84.6%, *p*=.012) and that e-cigarettes/vaping can help achieve it (87.1% vs. 83.1%, *p*=.037) (**Table 4.1.25**).

Table 4.1. 25. Awareness of, support and thoughts on the Smokefree goal; by Gender

		Male	Female	Total	*P-value*
Before today, were you aware of this goal? (n=1801)	Yes	353 (47.1)	450 (42.8)	803 (44.6)	.074
	No	397 (52.9)	601 (57.2)	998 (55.4)	
Do you support the Smokefree goal? (n=1668)	Definitely or somewhat yes	647 (94.9)	946 (95.9)	1593 (95.5)	.298
	Other*	35 (5.1)	40 (4.1)	75 (4.5)	
Do you think the Smokefree goal can be achieved? (n=1320)	Definitely or somewhat yes	468 (84.6)	685 (89.3)	1153 (87.3)	.012
	Other*	85 (15.4)	82 (10.7)	167 (12.7)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1366)	Definitely or somewhat yes	491 (83.1)	675 (87.1)	1166 (85.4)	.037
	Other*	100 (16.9)	100 (12.9)	200 (14.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells.

*Includes those who said not really, definitely not, and no opinion.

4.1.4.4 Smokefree 2025; by Ethnicity

Statistically significantly more Māori than non-Māori participants were aware of the Smokefree goal (57.7% vs. 43.6%, *p*=.002), while significantly more non-Māori than Māori supported the goal (95.8% vs. 91.2%, *p*=.023) (**Table 4.1.26**).

Table 4.1. 26. Awareness of, support and thoughts on the Smokefree goal; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
Before today, were you aware of this goal? (n=1801)	Yes	75 (57.7)	728 (43.6)	803 (44.6)	.002
	No	55 (42.3)	943 (56.4)	998 (55.4)	
Do you support this goal? (n=1667)	Definitely/somewhat yes	104 (91.2)	1488 (95.8)	1592 (95.5)	.023
	Other*	10 (8.8)	65 (4.2)	75 (4.5)	
Do you think this goal can be achieved? (n=1319)	Definitely/somewhat yes	73 (83.9)	1079 (87.6)	1152 (87.3)	.319
	Other*	14 (16.1)	153 (12.4)	167 (12.7)	
Do you think e-cigarettes/vaping can help achieve this goal? (n=1366)	Definitely/somewhat yes	78 (84.8)	1088 (85.4)	1166 (85.4)	.871
	Other*	14 (15.2)	186 (14.6)	200 (14.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. * Includes those who said not really, definitely not, and no opinion.

4.1.4.5 Smokefree 2025; by Smoking Status

Statistically significantly more current smokers than non-smokers were aware of the Smokefree goal (56.6% vs. 43.2%, *p*=.001), but significantly more non-smokers supported it (96.6% vs. 81.3%, *p*<.001), thought it can be achieved (90.4% vs. 58.1%, *p*<.001), and thought e-cigarettes/vaping can help achieve it (86.2% vs. 77.1%, *p*=.005) (**Table 4.1.27**).

Table 4.1. 27. Awareness of, support and thoughts on the Smokefree goal; by Smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
Before today, were you aware of this goal? (n=1801)	Yes	103 (56.6)	700 (43.2)	803 (44.6)	.001
	No	79 (43.4)	919 (56.8)	998 (55.4)	
Do you support this goal? (n=1668)	Definitely/somewhat yes	100 (81.3)	1493 (96.6)	1593 (95.5)	<.001
	Other†	23 (18.7)	52 (3.4)	75 (4.5)	
Do you think this goal can be achieved? (n=1319)	Definitely/somewhat yes	72 (58.1)	1080 (90.4)	1152 (87.3)	<.001
	Other†	52 (41.9)	115 (9.6)	167 (12.7)	
Do you think e-cigarettes/vaping can help achieve this goal? (n=1365)	Definitely/somewhat yes	101 (77.1)	1064 (86.2)	1165 (85.3)	.005
	Other†	30 (22.9)	170 (13.8)	200 (14.7)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who said not really, definitely not, and no opinion.

4.1.4.6 Smokefree 2025; by E-cigarette Use

Statistically significantly more current vapers than non-vapers were aware of the Smokefree goal (66.7% vs. 43.1%, *p*<.001) and thought e-cigarettes/vaping can help achieve it (96.5% vs. 84.3%, *p*<.001), while significantly more non-vapers supported it (95.9% vs. 90.7%, *p*=.017), and thought it can be achieved (88.0% vs. 77.0%, *p*=.006) and (**Table 4.1.28**).

Table 4.1. 28. Awareness of, support and thoughts on the Smokefree goal; by Vaping status

		Current vaper?		Total	*P-value*
		Yes	No*		
"Before today, were you aware of this goal?" (n=1801)	Yes	78 (66.7)	725 (43.1)	803 (44.6)	<.001
	No	39 (33.3)	959 (56.9)	998 (55.4)	
"Do you support this goal?" (n=1667)	Definitely/somewhat yes	88 (90.7)	1505 (95.9)	1593 (95.6)	.017
	Other§	9 (9.3)	65 (4.1)	74 (4.4)	
"Do you think this goal can be achieved?" (n=1319)	Definitely/somewhat yes	57 (77.0)	1095 (88.0)	1152 (87.3)	.006
	Other§	17 (23.0)	150 (12.0)	167 (12.7)	
"Do you think e-cigarettes/vaping can help achieve this goal?" (n=1366)	Definitely/somewhat yes	110 (96.5)	1056 (84.3)	1166 (85.4)	<.001
	Other§	4† (3.5)	196 (15.7)	200 (14.6)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes never-vapers as well as people who vaped less than once monthly. †Expected count less than 5. §Includes those who said not really, definitely not, and no opinion.

4.1.5 Logistic Regression Analyses

4.1.5.1 The association of vaping with smoking.

The model contained four independent variables (age, gender, ethnicity, and current smoking). The full model containing all predictors was significant, χ^2 (4, N = 1853) = 42.262, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not report current vaping.

As shown in **Table 4.1.29**, only two of the independent variables made a unique significant contribution to the model (gender and current smoking). The strongest predictor of reporting current vaping was current smoking, which had an odds ratio of 3.23 (95% CI 2.06-5.06) suggesting that current smokers were over 3 times as likely to be current vapers as non-smokers.

Table 4.1. 29. Logistic regression model predicting likelihood of being a current vaper.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	.393	.228	.085	1.481	.947	2.315
Gender	.587	.198	.003	1.799	1.220	2.653
Ethnicity	-.458	.314	.144	.633	.342	1.170
Current smoking	1.173	.229	.000	3.230	2.063	5.058

Reference categories: age (<25 years), gender (female), ethnicity (Māori), and current smoking (non-smoker).

4.1.5.2 The association of history of mental illness (HMI) with smoking and vaping.

A bivariate model was used to investigate the relationship of HMI with smoking and vaping while controlling for age, gender, and ethnicity. The full model (1,621 cases included, 233 missing) containing all predictors was significant, χ^2 (5, N = 1,621) = 25.422, $p < .001$, indicating that the model was able to distinguish between respondents who reported and did not report an HMI.

As shown in **Table 4.1.30**, only three of the independent variables made a unique significant contribution to the model (gender, current smoking, and current vaping). Both current smoking and current vaping were significantly associated with an HMI. The strongest predictor of reporting an HMI was current vaping, which had an odds ratio of 1.73 (95% CI 1.09-2.75) suggesting that current vapers were nearly twice as likely to report an HMI as non-vapers.

Table 4.1. 30. Logistic regression model predicting likelihood of reporting an HMI.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.167	.177	.346	.847	.599	1.197
Gender	-.458	.139	.001	.633	.482	.831
Ethnicity	-.395	.225	.079	.673	.433	1.047
Current smoking	.515	.198	.010	1.673	1.134	2.468
Current vaping	.550	.235	.019	1.734	1.093	2.749

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.1.5.3 The relationship between the Smokefree 2025 goal, smoking, and vaping.

Bivariate models were used to investigate the associations between responses on the Smokefree 2025 goal with smoking and vaping, while controlling for age, gender, ethnicity, smoking, and vaping.

4.1.5.3.1 Model 1: Awareness vs age, gender, ethnicity, smoking, and vaping

The first model, with 1,806 cases included (48 missing cases) assessed the relationship between awareness of the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant,

χ^2 (5, N = 1,806) = 45.374, $p < .001$, indicating that the model was able to distinguish between respondents who were aware and unaware of the Smokefree goal.

As shown in **Table 4.1.31**, only three of the independent variables made a unique significant contribution to the model (ethnicity, current smoking, and current vaping). The strongest predictor of reporting awareness of the Smokefree goal was current vaping, which had an odds ratio of 2.44 (95% CI 1.63-3.65) suggesting that current vapers were over twice as likely to be aware of the Smokefree goal as non-vapers.

Table 4.1. 31. Logistic regression model predicting likelihood of being aware of the Smokefree goal.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.231	.126	.067	.794	.620	1.017
Gender	.120	.099	.226	1.127	.929	1.369
Ethnicity	-.544	.187	.004	.580	.403	.837
Current smoking	.393	.163	.016	1.482	1.076	2.041
Current vaping	.891	.207	.000	2.438	1.626	3.654

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.1.5.3.2 Model 2: Support vs age, gender, ethnicity, smoking, and vaping

The second model, with 1,684 cases included (170 missing cases) assessed the relationship between support for the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant, χ^2 (5, N = 1,684) = 46.381, $p < .001$, indicating that the model was able to distinguish between respondents who supported and who did not support the Smokefree goal.

As shown in **Table 4.1.32**, only current smoking made a unique significant contribution to the model. Current smoking had an odds ratio of 0.15 (95% CI 0.09-0.27) suggesting that current smokers had significantly lower odds (and hence lower probability) of supporting the Smokefree goal than non-smokers. Equivalently (and possibly easier to interpret), compared to current smokers, non-smokers had odds of 6.58 (=1/0.152) with 95% CI 3.76-11.63 of supporting the Smokefree goal than current smokers.

Table 4.1. 32. Logistic regression model predicting likelihood of supporting the Smokefree goal.

	B	S.E.	p	Odds Ratio	95% CI Odds Ratio	
					Lower	Upper
Age	-.492	.289	.089	.611	.347	1.077
Gender	.030	.251	.905	1.030	.630	1.684
Ethnicity	.718	.371	.053	2.050	.992	4.239
Current smoking	-1.886	.287	.000	.152	.086	.266
Current vaping	-.402	.403	.319	.669	.304	1.474

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.1.5.3.3 Model 3: Belief that it can be achieved: by age, gender, ethnicity, smoking, and vaping

The third model, with 1,335 cases included (519 missing cases) assessed the relationship between belief that the Smokefree goal can be achieved with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant, χ^2 (5, N = 1,335) = 78.729, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not believe that the Smokefree goal can be achieved.

As shown in **Table 4.1.33**, only current smoking made a unique significant contribution to the model. Current smoking had an odds ratio of 0.16 (95% CI 0.11-0.25) suggesting that current smokers had significantly lower odds (and hence lower probability) of believing that the Smokefree goal can be achieved than non-smokers. Equivalently (and possibly easier to interpret), compared to current smokers, non-smokers had odds of 6.17 (=1/0.162) with 95% CI 4.07-9.35, of believing that the Smokefree goal can be achieved than current smokers.

Table 4.1. 33. Logistic regression model predicting likelihood of believing that the Smokefree goal can be achieved.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.063	.220	.775	.939	.610	1.445
Gender	-.193	.177	.276	.825	.583	1.167
Ethnicity	.296	.318	.352	1.345	.721	2.508
Current smoking	-1.820	.213	.000	.162	.107	.246
Current vaping	-.420	.317	.185	.657	.353	1.223

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.1.5.3.4 Model 4: Belief that e-cigarettes/vaping can help to achieve it: by age, gender, ethnicity, smoking, and vaping

The fourth model, with 1,348 cases included (506 missing cases), assessed the relationship between belief that e-cigarettes/vaping can help to achieve the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant, χ^2 (5, N = 1,348) = 44.794, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not believe that e-cigarettes/vaping can help to achieve the Smokefree goal.

As shown in **Table 4.1.34**, only three of the independent variables made a unique significant contribution to the model (age, current smoking and current vaping). The strongest predictor of believing that e-cigarettes/vaping can help achieve the Smokefree goal was current vaping, which had an odds ratio of 7.00 (95% CI 2.48-19.77) suggesting that current vapers were 7 times as likely to believe that e-cigarettes/vaping can help to achieve the Smokefree goal as non-vapers.

Table 4.1. 34. Logistic regression model predicting likelihood of believing that e-cigarettes/vaping can help to achieve the Smokefree goal.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.678	.183	.000	.508	.355	.727
Gender	-.275	.158	.082	.760	.557	1.036
Ethnicity	.078	.309	.800	1.082	.590	1.983
Current smoking	-.801	.235	.001	.449	.283	.712
Current vaping	1.946	.530	.000	6.999	2.477	19.771

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.1.6 Key Findings of T1 survey

4.1.6.1 Tobacco Use

- Overall, 49.9% (95% CI = 47.6-52.2) of participants ever smoked, 10.4% (95% CI = 9.1-11.9) were current smokers, and 5.6% (95% CI = 4.6-6.7) smoked at least once daily. Of current smokers: 64.2% smoked 1-5 cigarettes/day on the days that they smoked, 69.7% smoked their first cigarette after more than 60 minutes of waking up, 87.4% never or almost never smoked in indoor and 65.1% in outdoor smokefree spaces, 68.7% planned to quit smoking at some point, and 37.8% had tried to quit smoking (73.8% of these had made 1-3 serious attempts).
- Concerning smoking intentions of respondents in response to simulated price increases of $5.00, $10.00, $15.00 or >$15.00 per packet of regular cigarettes or RYO tobacco, the proportion of students who would continue to smoke the amount declined, while the proportion of students who would switch to e-cigarettes, or quit smoking, increased at all price levels.
- The majority of respondents agreed/strongly agreed with the three statements about potentially new smokefree policies for New Zealand: "Being smokefree is New Zealand way of life" (50.7%); "The number of places allowed to sell cigarettes and tobacco should be reduced" (68.7%), and "Cigarettes should no longer be sold in New Zealand in 10 years" (53.0%). Current smokers were significantly less likely than non-smokers to agree with all three statements: (18.5% vs 54.2%, $p<.001$), (25.7% vs 73.6%, $p<.001$) and (21.3% vs 56.5%, $p<.001$), for the first, second, and third statements, respectively.
- Participants aged ≥25 years were significantly more likely to report ever smoking (55.0% vs. 48.8%, $p=.040$), smoking the first cigarette within 60 minutes of waking (57.1% vs. 25.8%, $p=.001$) and trying to quit smoking (65.5% vs. 33.3%, $p=.001$), than those aged <25 years.
- Males were significantly more likely to report ever smoking (59.0% vs. 43.5%, $p<.001$), current smoking (15.8% vs. 6.6%, $p<.001$), and smoking at least once daily (8.9% vs. 3.1%, $p<.001$) than females.
- Māori were significantly more likely to report ever smoking (71.0% vs. 48.3%, $p<.001$) than non-Māori.

4.1.6.2 E-cigarette Use

- Overall, 37.0% (95% CI = 34.8-39.2) of participants had ever vaped, 6.5% (95% CI = 5.4-7.7) were current vapers, and 2.5% (95% CI = 1.9-3.4) vaped daily or almost daily. Of vapers, 79.6% never or almost never vaped in indoor, and 71.3% in outdoor smokefree spaces, 6.2% vaped to quit smoking, 13.4% for enjoyment, 63.7% vaped out of curiosity/just wanted to try them, and 80.3% of those who had vaped daily for a month or more used nicotine-containing devices.
- Regardless of vaping status, 75.3% of respondents thought e-cigarettes were less harmful than tobacco cigarettes.
- Concerning three statements about vaping, 30.6% of respondents disagreed/strongly disagreed with the first statement "If someone vapes around me they are causing me harm because of second-hand vapour", 74.2% with the second statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed" and 54.5% with the third statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed".
    - Participants aged <25 years were more likely than participants aged ≥25 years to disagree with the first statement (32.6% vs 21.6%, $p<.001$).
    - Males were more likely than females to disagree with the first statement (34.4% vs 27.8%, $p=.003$), but less likely to disagree with the second (70.0% vs 77.2%, $p=.001$) and third statements (49.1% vs 58.4%, $p<.001$).
    - Māori were more likely that non-Māori to disagree with the first statement (54.8% vs 28.6%, $p<.001$), but less likely to disagree with the second statement (66.9% vs 774.8%, $p=.047$).
    - Current smokers were more likely than non-smokers to disagree with the first (55.7% vs 27.8%, $p<.001$), but less likely to disagree with the second (53.0% vs 76.5%, $p<.001$) and third statements (35.0% vs 56.7%, $p<.001$).
- Participants aged <25 years were significantly more likely to report ever vaping (39.8% vs 27.8%, $p<.001$) and vaping out of curiosity (67.3% vs 43.1%, $p<.001$), while participants aged ≥25 years were significantly more likely to report vaping daily or almost daily (6.8% vs 1.6%, $p<.001$), vaping daily for a month or more (41.3% vs 11.4%, $p<.001$), vaping to quit smoking (29.2% vs 2.4%, $p<.001$) and using nicotine-containing devices (96.6% vs 70.7%, $p=.005$).
- Males were more likely than females to report ever vaping (47.6% vs 30.5%, $p<.001$), current vaping (9.0% vs 4.5%, $p<.001$), vaping daily or almost daily (4.1% vs 1.3%,

p<.001), vaping daily for a month or more (19.6% vs 11.4%, *p*=.010), and thought that e-cigarettes were less harmful than tobacco cigarettes (79.6% vs 72.2%, *p*=.002).

- Māori were significantly more likely than non-Māori to report ever vaping (51.9% vs 36.5%, *p*<.001) and vaping daily or almost daily (5.8% vs 2.3%, *p*=.011).
- Current smokers were significantly more likely than non-smokers to report ever vaping (72.3% vs 33.7%, *p*<.001), current vaping (17.1% vs 5.2%, *p*<.001), daily or almost daily vaping (7.8% vs 1.9%, *p*<.001), daily vaping for a month or more (25.9% vs 12.9%, *p*=.001), while non-smokers were significantly more likely to report never or almost never vaping indoors (83.0% vs 69.5%, *p*=.009) or outdoors (75.4% vs 59.3%, *p*=.005) smokefree spaces, and vaping out of curiosity (68.0% vs 47.7%, *p*<.001).

4.1.6.3 The Smokefree 2025 goal

- Overall, 43.3% (95% CI = 41.0-45.6) of respondents were aware of the Smokefree goal, 95.5% (95% CI = 94.4-96.4) supported it, 87.3% (95% CI = 85.4-89.1) thought it can be achieved, and 85.4% (95% CI = 83.4-87.2) thought e-cigarettes/vaping can help achieve it.
- Significantly more participants aged <25 years thought e-cigarettes can help achieve the goal (86.9% vs 78.3%, *p*=.001).
- Females were significantly more likely than males to think the Smokefree goal can be achieved (89.3% vs 84.6%, *p*=.012) and that e-cigarettes/vaping can help achieve it (87.1% vs 83.1%, *p*=.037).
- Māori were significantly more likely to be aware of the Smokefree goal than non-Māori (57.7% vs 43.6%, *p*=.002), but less likely to support it (91.2% vs 95.8%, *p*=.023).
- Current smokers were significantly more likely than non-smokers to be aware of the Smokefree goal (56.6% vs 43.2%, *p*=.001), but less likely to support it (81.3% vs 96.6%, *p*<.001), to think that it can be achieved (58.1% vs 90.4%, *p*<.001) or that e-cigarettes/vaping can help achieve it (77.1% vs 86.2%, *p*=.005).
- Current vapers were more likely than non-vapers to be aware of the Smokefree goal (66.7% vs 43.1%, *p*<.001) and to think that e-cigarettes/vaping can help achieve it (96.5% vs. 84.3%, *p*<.001), but less likely to support the goal (90.7% vs 95.9%, *p*=.017), or to think it can be achieved (77.0% vs 88.0%, *p*=.006).

4.1.6.4 Logistic Regression Analyses

- Vaping and smoking: males were 1.80 times as likely as females (95% CI 1.22-2.65) and current smokers were over 3 times as likely as non-smokers (OR 3.23, 95% CI 2.06-5.06) to report current vaping.
- HMI and smoking and vaping: females were 1.58 times as likely as males (95% CI 1.20-2.07), current smokers were 1.67 times as likely as non-smokers (95% CI 1.13-2.47), and current vapers were 1.73 times as likely as non-vapers (95% CI 1.09-2.75), to report an HMI.
- The Smokefree goal, smoking, and vaping:
    - Awareness: Māori were 1.72 times as likely as non-Māori (95% CI 1.19-2.48), current smokers were 1.48 times as likely as non-smokers (95% CI 1.08-2.04), and current vapers were 2.44 as likely as non-vapers (95% CI 1.63-3.65), to be aware of the Smokefree goal.
    - Support: non-smokers were over 6 times as likely as current smokers to support the Smokefree goal (OR 6.58, 95% CI 3.76-11.63).
    - Belief that the goal can be achieved: non-smokers were over 6 times as likely as current smokers to believe that the Smokefree goal can be achieved (OR 6.17, 95% CI 4.07-9.35).
    - Belief that e-cigarettes/vaping can help to achieve the Smokefree goal: participants aged <25 years were 1.97 times as likely as participants aged ≥25 years (95% CI 1.38-2.82); non-smokers were 2.23 times as likely as non-smokers (95% CI 1.40-3.53), and current vapers were 7.00 times as likely as non-vapers (95% CI 2.48-19.77), to believe that e-cigarettes/vaping can help to achieve the Smokefree goal.

4.2 New Zealand – T2 survey

4.2.1 Demographic Characteristics

A total of 2,257 students took part in the second survey (T2) and 1,922 were included in the analysis (**Figure 4.2.1**); 593 (30.9%) completed the survey online and 1,329 (69.1%) on paper. **Table 4.2.1** summarises the demographic characteristics of participants and **Table 4.2.2** presents the weighted and unweighted numbers of participants, by university.

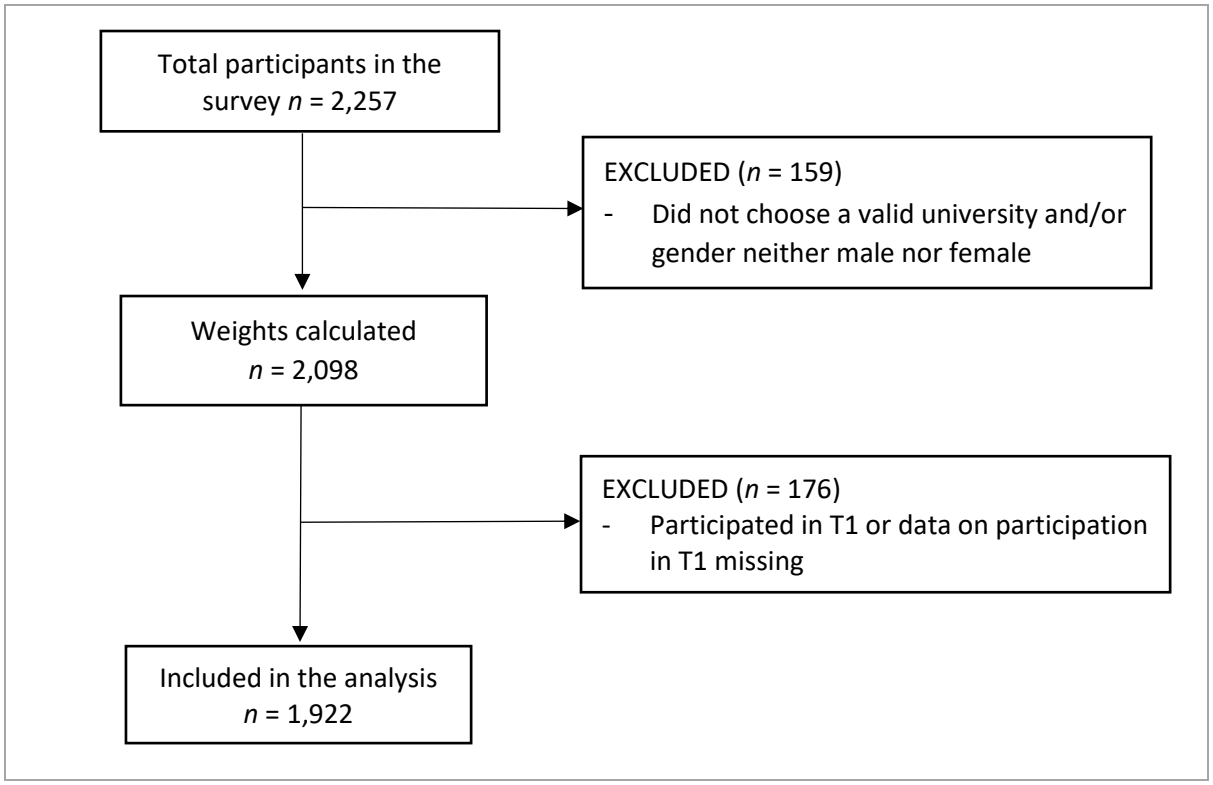


Figure 4.2. 1. Flowchart of the selection of participants included in this analysis.

Table 4.2. 1. The demographic characteristics of participants in T2

Variable	Sample (n = 1922) %
Age	
≤17 years	62 (3.2)
18-20 years	953 (49.6)
21-24 years	551 (28.7)
25-29 years	183 (9.5)
30-34 years	90 (4.7)
35-39 years	43 (2.2)
40-44 years	25 ()1.3
≥45 years	12 (0.6)
Missing age	3 (0.2)
Gender	
Male	828 (43.1)
Female	1094 (56.9)
Years lived in New Zealand	
Less than 1 year	146 (7.6)
1-5 years	295 (15.3)
6-10 years	141 (7.3)
More than 10 years	1337 (69.6)
Missing	3 (0.2)
Ethnicity	
NZ European	1099 (57.2)
Māori	151 (7.9)
Samoan	40 (2.1)
Cook Island Māori	13 (0.7)
Tongan	26 (1.4)
Niuean	7 (0.4)
Chinese	173 (9.0)
Indian	140 (7.3)
Other	475 (24.7)
University	
Auckland University of Technology	199 (10.4)
Lincoln University	66 (3.4)
Massey University	292 (15.2)
University of Auckland	340 (17.7)
University of Canterbury	365 (19.0)
University of Otago	215 (11.2)
University of Waikato	153 (8.0)
Victoria University of Wellington	302 (15.7)
History of mental illness	
Yes	347 (18.1)
No	1325 (68.9)
Data missing	250 (13.0)

The percentages for ethnicity sum up to >100% because respondents could select more than one option.

Table 4.2. 2. Participants in T2, by university of origin.

	Unweighted	Weighted
Auckland University of Technology	199 (10.4)	306 (15.8)
Lincoln University	66 (3.4)	32 (1.7)
Massey University	292 (15.2)	334 (17.3)
University of Auckland	340 (17.7)	465 (24.0)
University of Canterbury	365 (19.0)	186 (9.6)
University of Otago	215 (11.2)	237 (12.3)
University of Waikato	153 (8.0)	146 (7.6)
Victoria University of Wellington	302 (15.7)	241 (12.5)

4.2.2 Tobacco Use

4.2.2.1 Tobacco use; Overall

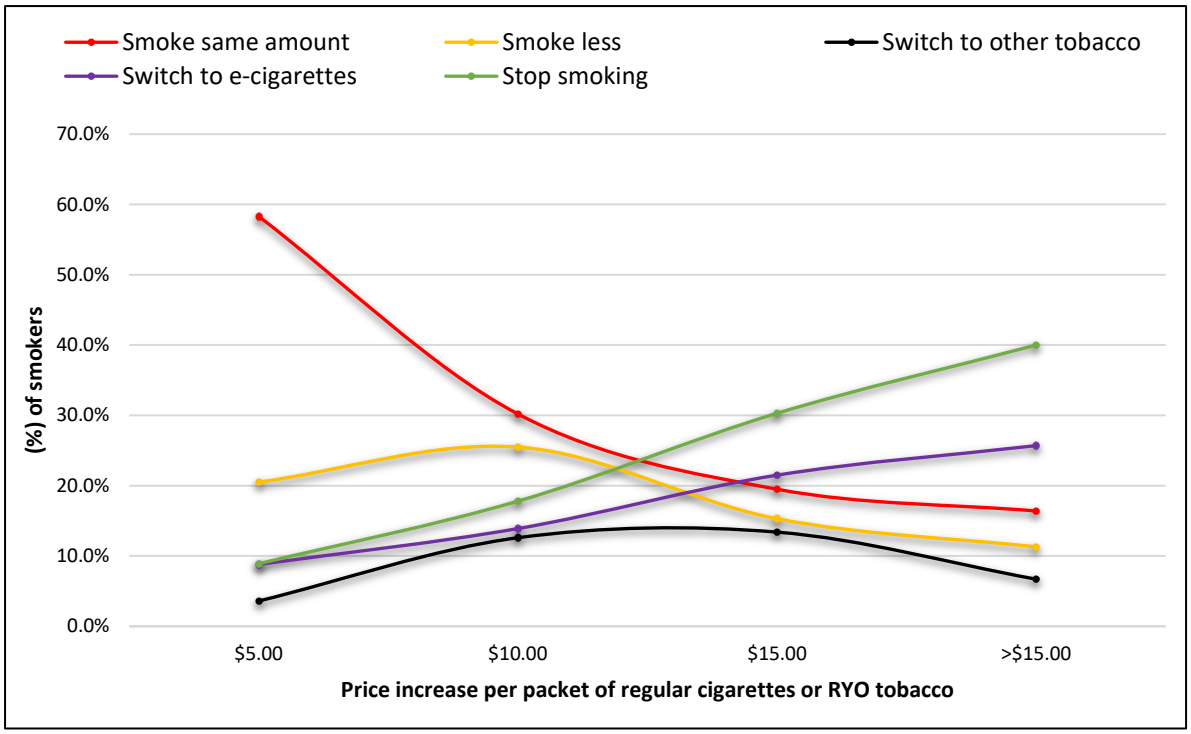
48.5% of the sample (95% CI = 46.3-50.8) reported ever smoking cigarettes or tobacco, 11.3% (95% CI = 9.9-12.8) currently smoked, and 4.5% (95% CI = 3.6-5.5) smoked at least once daily.

Of current smokers, 70.0% smoked 1-5 cigarettes/day and 30.0% smoked more than 5 cigarettes/day, 32.9% smoked their first cigarette within 60 minutes of waking up and 67.1% after more than 60 minutes of waking, 90.6% reported never or almost never smoking in indoor and 67.8% in outdoor spaces where smoking is banned, 61.1% planned to quit smoking, 42.4% reported trying to quit smoking in the last 12-months, and 69.1% of those had made 1-3 serious attempts to quit smoking.

The smoking intentions of respondents according to simulated price increase of their regular cigarettes or RYO tobacco of $5.00, $10.00, $15.00 or >$15.00 per packet are displayed in **Table 4.2.3 and Figure 4.2.2**. The proportion of respondents who indicated they would smoke the same amount that they currently smoked declined, but the proportion of respondents who reported that they would switch to e-cigarettes, or quit smoking, increased at all price levels.

Table 4.2. 3. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00.

	$5.00	$10.00	$15.00	>$15.00
Smoke the same amount as today	58.3 (51.3-65.4)	30.2 (23.9-37.0)	19.5 (14.3-25.4)	16.4 (11.5-22.2)
Smoke less than today	20.5 (15.1-26.8)	25.5 (19.7-32.3)	15.3 (10.9-21.2)	11.3 (7.4-16.6)
Switch to other tobacco products	3.6 (1.4-7.1)	12.6 (8.3-18.0)	13.4 (9.2-19.0)	6.7 (3.5-10.6)
Switch to e-cigarettes	8.8 (5.4-13.9)	13.9 (9.6-19.7)	21.5 (16.0-27.6)	25.7 (19.9-32.4)
Stop smoking altogether	8.8 (5.4-13.9)	17.8 (12.6-23.6)	30.3 (23.9-36.9)	40.0 (33.3-47.2)
Total	**200 (100.0)**	**199 (100.0)**	**206 (100.0)**	**202 (100.0)**



To plot a linear scale, cigarette price indicated as >$15 is assumed to be $20.

Figure 4.2. 2. Change in smoking intentions with price increase.

Table 4.2.4 illustrates the responses of participants to three statements about potentially new smokefree policies for New Zealand: 51.2% of respondents agreed with the first statement "Being smokefree is part of the New Zealand way of life", 68.3% with the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced", and 55.0% with the third statement "Cigarettes should no longer be sold in New Zealand in 10 years".

Table 4.2. 4. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand.

	Agree/strongly agree	Other	Total
"Being smokefree is part of the New Zealand way of life."	980 (51.2, 48.9-53.5)	935 (48.8, 46.6-51.1)	1914 (100.0)
"The number of places allowed to sell cigarettes and tobacco should be reduced."	1307 (68.3, 66.2-70.4)	606 (31.7, 29.6-33.8)	1913 (100.0)
"Cigarettes should no longer be sold in New Zealand in 10 years."	1054 (55.0, 52.8-57.3)	862 (45.0, 42.8-47.3)	1916 (100.0)

Table 4.2.5 illustrates the responses of participants, by smoking status, to the three statements about potentially new smokefree policies for New Zealand. Current smokers were statistically significantly less likely than non-smokers to agree with all three statements: first statement (23.7% vs 54.6%, $p<.001$), second statement (30.7% vs 73.1%, $p<.001$), and third statement (21.4% vs 59.3%, $p<.001$).

Table 4.2. 5. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Smoking status.

		Current smoker?		Total	*P-value*
		Yes	No*		
Being smokefree is part of the New Zealand way of life. (n=1914)	Agree/strongly agree	51 (23.7)	928 (54.6)	979 (51.1)	<.001
	Other†	164 (76.3)	771 (45.4)	935 (48.9)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1912)	Agree/strongly agree	66 (30.7)	1241 (73.1)	1307 (68.4)	<.001
	Other†	149 (69.3)	456 (26.9)	605 (31.6)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1916)	Agree/strongly agree	46 (21.4)	1008 (59.3)	1054 (55.0)	<.001
	Other†	169 (78.6)	693 (40.7)	862 (45.0)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.2.2.2 Tobacco use; by Age group

Statistically significantly more participants aged ≥25 years ever smoked (55.0% vs. 47.1%, $p=.007$), smoked daily (7.8% vs. 3.8%, $p=.001$), smoked the first cigarette within 60 minutes of waking (46.0% vs. 29.6%, $p=.028$), planned to quit smoking (74.5% vs. 57.7%, $p=.028$), and made 1-3 serious attempts to quit smoking (85.2% vs. 62.8%, $p=.031$) (**Table 4.2.6**).

Table 4.2. 6. Smoking patterns of participants; by Age group

		<25 years	≥25 years	Total	*P-value*
Ever smoked? (n=1928)	Yes	739 (47.1)	198 (55.0)	937 (48.6)	.007
	No	829 (52.9)	162 (45.0)	991 (51.4)	
Currently smoke? (n=1930)	Yes	172 (11.0)	46 (12.8)	218 (11.3)	.325
	No	1398 (89.0)	314 (87.2)	1712 (88.7)	
Smoke at least daily? (n=1930)	Yes	59 (3.8)	28 (7.8)	87 (4.5)	.001
	No†	1511 (96.2)	332 (92.2)	1843 (95.5)	
Number of cigarettes/day in the past 30 days (n=238)	1-5 cigarettes	138 (73.0)	29 (59.2)	167 (70.2)	.059
	>5 cigarettes	51 (27.0)	20 (40.8)	71 (29.8)	
Time to first cigarette (n=249)	Within 60 minutes	59 (29.6)	23 (46.0)	82 (32.9)	.028
	After 60 minutes	140 (70.4)	27 (54.0)	167 (67.1)	
Smoking in indoor smokefree spaces (n=253)	Never/almost never	179 (89.1)	50 (96.2)	229 (90.5)	.119
	Other	22 (10.9)	2 (3.8)	24 (9.5)	
Smoking in outdoor smokefree spaces (n=251)	Never/almost never	132 (66.0)	38 (74.5)	170 (67.7)	.246
	Other	68 (34.0)	13 (25.5)	81 (32.3)	
Quit intentions (n=252)	Plans to quit	116 (57.7)	38 (74.5)	154 (61.1)	.028
	Not planning to quit	85 (42.3)	13 (25.5)	98 (38.9)	
Attempted to quit in the last 12 months? (n=252)	Yes	80 (39.8)	27 (52.9)	107 (42.5)	.090
	No	121 (60.2)	24 (47.1)	145 (57.5)	
Number of serious quit attempts in the last 12 months (n=105)	1-3 attempts	49 (62.8)	23 (85.2)	72 (68.6)	.031
	>3 attempts	29 (37.2)	4 (14.8)	33 (31.4)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who smoked at least weekly, monthly, and less than monthly.

The responses of participants on how their smoking will change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00, by age group, are shown in **Table 4.2.7**. Statistically significant differences were seen only in those who would stop smoking if the price was increased by >$15.00, where significantly more participants aged <25 indicated they would stop smoking compared to those aged ≥25 years (44.4% vs. 22.0%, *p*=.009).

Table 4.2. 7. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00; by Age group.

		<25 years	≥25 years	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=200)	Yes	12 (7.6)	5 (11.6)	17 (8.5)	.406
	Other†	145 (92.4)	38 (88.4)	183 (91.5)	
Stop smoking if price increased by $5.00? (n=201)	Yes	17 (10.8)	1 (2.3)	18 (9.0)	.086
	Other§	141 (89.2)	42 (97.7)	183 (91.0)	
Switch to e-cigarettes if price increased by $10.00? (n=200)	Yes	22 (14.2)	6 (13.3)	28 (14.0)	.884
	Other†	133 (85.8)	39 (86.7)	172 (86.0)	
Stop smoking if price increased by $10.00? (n=199)	Yes	30 (19.5)	5 (11.1)	35 (17.6)	.195
	Other§	124 (80.5)	40 (88.9)	164 (82.4)	
Switch to e-cigarettes if price increased by $15.00? (n=206)	Yes	34 (21.0)	10 (22.7)	44 (21.4)	.803
	Other†	128 (79.0)	34 (77.3)	162 (78.6)	
Stop smoking if price increased by $15.00? (n=206)	Yes	53 (32.7)	9 (20.5)	62 (30.1)	.116
	Other§	109 (67.3)	35 (79.5)	144 (69.9)	
Switch to e-cigarettes if price increased by >$15.00? (n=202)	Yes	37 (23.0)	15 (36.6)	52 (25.7)	.075
	Other†	124 (77.0)	26 (63.4)	150 (74.3)	
Stop smoking if price increased by >$15.00? (n=203)	Yes	72 (44.4)	9 (22.0)	81 (39.9)	.009
	Other§	90 (55.6)	32 (78.0)	122 (60.1)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected count less than 5. †Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, stop smoking altogether, and those who did not know how their smoking would change. §Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, switch to e-cigarettes, and those who did not know how their smoking would change.

Table 4.2.8 illustrates the responses of participants, by age, to three statements about potentially new smokefree policies for New Zealand. Statistically significantly more participants aged <25 than those aged ≥25 years agreed or strongly agreed (agreed) with the third statement "Cigarettes should not be sold in New Zealand in 10 years" (56.6% vs. 48.0%, p=.003).

Table 4.2. 8. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Age group

		<25 years	≥25 years	Total	*P-value*
Being smokefree is part of the New Zealand way of life. (n=1910)	Agree/strongly agree	802 (51.5)	175 (49.4)	977 (51.2)	.474
	Other*	754 (48.5)	179 (50.6)	933 (48.8)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1909)	Agree/strongly agree	1077 (69.2)	227 (64.3)	1304 (68.3)	.073
	Other*	479 (30.8)	126 (35.7)	605 (31.7)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1912)	Agree/strongly agree	881 (56.6)	171 (48.0)	1052 (55.0)	.003
	Other*	675 (43.4)	185 (52.0)	860 (45.0)	

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.2.2.3 Tobacco use; by Gender

Statistically significantly more males than females reported ever smoking (56.3% vs. 42.9%, $p<.001$), current smoking (16.4% vs. 7.5%, $p<.001$), daily smoking (7.0% vs. 2.7%, $p<.001$), but statistically significantly more females than males reported not smoking in outdoor smokefree spaces (75.5% vs. 62.5%, $p=.030$), and having tried to quit smoking (51.4% vs. 35.6%, $p=.012$) (**Table 4.2.9**).

Table 4.2. 9. Smoking patterns of participants; by Gender

		Male	Female	Total	*P-value*
Ever smoked? (n=1932)	Yes	461 (56.3)	477 (42.9)	938 (48.6)	<.001
	No	358 (43.7)	636 (57.1)	994 (51.4)	
Currently smoke? (n=1934)	Yes	134 (16.4)	84 (7.5)	218 (11.3)	<.001
	No	685 (83.6)	1031 (92.5)	1716 (88.7)	
Smoke at least daily? (n=1933)	Yes	57 (7.0)	30 (2.7)	87 (4.5)	<.001
	No*	761 (93.0)	1085 (97.3)	1846 (95.5)	
Number of cigarettes/day in the last 30 days (n=238)	1-5 cigarettes	94 (67.1)	73 (74.5)	167 (70.2)	.223
	>5 cigarettes	46 (32.9)	25 (25.5)	71 (29.8)	
Time to first cigarette (n=249)	Within 60 minutes	51 (35.2)	31 (29.8)	82 (32.9)	.374
	After 60 minutes	94 (64.8)	73 (70.2)	167 (67.1)	
Smoking in indoor smokefree spaces (n=252)	Never/almost never	128 (88.3)	101 (94.4)	229 (90.9)	.096
	Other	17 (11.7)	6 (5.6)	23 (9.1)	
Smoking in outdoor smokefree spaces (n=250)	Never/almost never	90 (62.5)	80 (75.5)	170 (68.0)	.030
	Other	54 (37.5)	26 (24.5)	80 (32.0)	
Quit intentions (n=252)	Plans to quit	83 (57.2)	71 (66.4)	154 (61.1)	.142
	Not planning to quit	62 (42.8)	36 (33.6)	98 (38.9)	
Attempted to quit in the last 12 months? (n=253)	Yes	52 (35.6)	55 (51.4)	107 (42.3)	.012
	No	94 (64.4)	52 (48.6)	146 (57.7)	
Number of serious quit attempts in the last 12 months (n=105)	1-3 attempts	34 (66.7)	38 (70.4)	72 (68.6)	.683
	>3 attempts	17 (33.3)	16 (29.6)	33 (31.4)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.
*Includes those who smoked at least weekly, monthly, and less than monthly.

The responses of participants on how their smoking will change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00, by gender, are shown in **Table 4.2.10**. Statistically significantly more females than males reported they would stop smoking if the price was increased by $10.00 (24.4% vs. 13.2%, *p*=.040) or by $15.00 (38.5% vs. 23.7%, *p*=.022).

Table 4.2. 10. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00; by Gender.

		Male	Female	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=199)	Yes	9 (7.8)	8 (9.6)	17 (8.5)	.640
	Other*	107 (92.2)	75 (90.4)	182 (91.5)	
Stop smoking if price increased by $5.00? (n=201)	Yes	7 (6.0)	11 (13.1)	18 (9.0)	.082
	Other†	110 (94.0)	73 (86.9)	183 (91.0)	
Switch to e-cigarettes if price increased by $10.00? (n=200)	Yes	18 (15.8)	10 (11.6)	28 (14.0)	.401
	Other*	96 (84.2)	76 (88.4)	172 (86.0)	
Stop smoking if price increased by $10.00? (n=200)	Yes	15 (13.2)	21 (24.4)	36 (18.0)	.040
	Other†	99 (86.8)	65 (75.6)	164 (82.0)	
Switch to e-cigarettes if price increased by $15.00? (n=207)	Yes	22 (19.1)	23 (25.0)	45 (21.7)	.309
	Other*	93 (80.9)	69 (75.0)	162 (78.3)	
Stop smoking if price increased by $15.00? (n=205)	Yes	27 (23.7)	35 (38.5)	62 (30.2)	.022
	Other†	87 (76.3)	56 (61.5)	143 (69.8)	
Switch to e-cigarettes if price increased by >$15.00? (n=203)	Yes	27 (23.9)	25 (27.8)	52 (25.6)	.529
	Other*	86 (76.1)	65 (72.2)	151 (74.4)	
Stop smoking if price increased by >$15.00? (n=202)	Yes	39 (34.8)	42 (46.7)	81 (40.1)	.088
	Other†	73 (65.2)	48 (53.3)	121 (59.9)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, stop smoking altogether, and those who did not know how their smoking would change. †Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, switch to e-cigarettes, and those who did not know how their smoking would change.

Table 4.2.11 illustrates the responses of participants, by gender, to three statements about potentially new smokefree policies for New Zealand. Statistically significantly more females than males agreed with the first statement "Being smokefree is part of the New Zealand way of life" (53.4% vs. 48.1%, p=.022), the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced" (74.7% vs. 59.8%, p<.001), and the third statement "Cigarettes should not be sold in New Zealand in 10 years" (61.2% vs. 46.6%, p<.001).

Table 4.2. 11. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Gender.

		Male	Female	Total	*P-value*
Being smokefree is part of the New Zealand way of life. (n=1914)	Agree/strongly agree	390 (48.1)	589 (53.4)	979 (51.1)	.022
	Other*	421 (51.9)	514 (46.6)	935 (48.9)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1912)	Agree/strongly agree	485 (59.8)	822 (74.7)	1307 (68.4)	<.001
	Other*	326 (40.2)	279 (25.3)	605 (31.6)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1915)	Agree/strongly agree	378 (46.6)	675 (61.2)	1053 (55.0)	<.001
	Other*	434 (53.4)	428 (38.8)	862 (45.0)	

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.2.2.4 Tobacco use; by Ethnicity

Statistically significantly more Māori than non-Māori reported ever smoking (62.3% vs. 47.3%, p<.001) and current smoking (18.8% vs. 10.6%, p=.002) (**Table 4.2.12**).

Table 4.2. 12. Smoking patterns of participants; by Ethnicity.

		Māori	Non-Māori	Total	*P-value*
Ever smoked? (n=1931)	Yes	96 (62.3)	841 (47.3)	937 (48.5)	<.001
	No	58 (37.7)	936 (52.7)	994 (51.5)	
Currently smoke? (n=1934)	Yes	29 (18.8)	189 (10.6)	218 (11.3)	.002
	No	125 (81.2)	1591 (89.4)	1716 (88.7)	
Smoke at least daily? (n=1933)	Yes	10 (6.5)	77 (4.3)	87 (4.5)	.214
	No†	144 (93.5)	1702 (95.7)	1846 (95.5)	
Number of cigarettes/day in the last 30 days (n=238)	1-5 cigarettes	18 (62.1)	149 (71.3)	167 (70.2)	.309
	>5 cigarettes	11 (37.9)	60 (28.7)	71 (29.8)	
Time to first cigarette (n=248)	Within 60 minutes	8 (25.8)	74 (34.1)	82 (33.1)	.358
	After 60 minutes	23 (74.2)	143 (65.9)	166 (66.9)	
Smoking in indoor smokefree spaces (n=253)	Never/almost never	28 (84.8)	201 (91.4)	229 (90.5)	.234
	Other	5 (15.2)	19 (8.6)	24 (9.5)	
Smoking in outdoor smokefree spaces (n=251)	Never/almost never	23 (69.7)	147 (67.4)	170 (67.7)	.795
	Other	10 (30.3)	71 (32.6)	81 (32.3)	
Quit intentions (n=252)	Plans to quit	16 (47.1)	138 (63.3)	154 (61.1)	.071
	Not planning to quit	18 (52.9)	80 (36.7)	98 (38.9)	
Attempted to quit smoking in the last 12 months? (n=254)	Yes	12 (35.3)	96 (43.6)	108 (42.5)	.360
	No	22 (64.7)	124 (56.4)	146 (57.5)	
Number of serious quit attempts in the last 12 months (n=106)	1-3 attempts	8 (66.7)	65 (69.1)	73 (68.9)	.861
	>3 attempts	4 (33.3)	29 (30.9)	33 (31.1)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.

*Expected count less than 5. †Includes those who smoked at least weekly, monthly, and less than monthly.

The responses of participants on how their smoking will change if the price of their regular packet of cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00, by ethnicity, are shown in **Table 4.2.13**. There were no statistically significant differences between Māori and non-Māori.

Table 4.2. 13. Change in smoking if the price of a packet of participants' regular cigarettes or RYO tobacco was increased by $5.00, 10.00, 15.00 or >15.00; by Ethnicity.

		Māori	Non-Māori	Total	*P-value*
Switch to e-cigarettes if price increased by $5.00? (n=201)	Yes	1* (3.7)	17 (9.8)	18 (9.0)	.304
	Other†	26 (96.3)	157 (90.2)	183 (91.0)	
Stop smoking if price increased by $5.00? (n=200)	Yes	3* (11.5)	15 (8.6)	18 (9.0)	.628
	Other§	23 (88.5)	159 (91.4)	182 (91.0)	
Switch to e-cigarettes if price increased by $10.00? (n=198)	Yes	3* (10.7)	24 (14.1)	27 (13.6)	.627
	Other†	25 (89.3)	146 (85.9)	171 (86.4)	
Stop smoking if price increased by $10.00? (n=200)	Yes	5 (17.2)	31 (18.1)	36 (18.0)	.908
	Other§	24 (82.8)	140 (81.9)	164 (82.0)	
Switch to e-cigarettes if price increased by $15.00? (n=206)	Yes	5 (16.7)	39 (22.2)	44 (21.4)	.497
	Other†	25 (83.3)	137 (77.8)	162 (78.6)	
Stop smoking if price increased by $15.00? (n=206)	Yes	7 (23.3)	56 (31.8)	63 (30.6)	.351
	Other§	23 (76.7)	120 (68.2)	143 (69.4)	
Switch to e-cigarettes if price increased by >$15.00? (n=202)	Yes	5 (19.2)	47 (26.7)	52 (25.7)	.416
	Other†	21 (80.8)	129 (73.3)	150 (74.3)	
Stop smoking if price increased by >$15.00? (n=202)	Yes	9 (34.6)	72 (40.9)	81 (40.1)	.541
	Other§	17 (65.4)	104 (59.1)	121 (59.9)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Expected cell count less than 5. †Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, stop smoking altogether, and those who did not know how their smoking would change. §Includes those who said they would smoke the same amount that they currently smoked, smoke less than they currently smoke, switch to other tobacco products, switch to e-cigarettes, and those who did not know how their smoking would change.

Table 4.2.14 illustrates the responses of participants, by ethnicity, to three statements about potentially new smokefree policies for New Zealand. Statistically significantly more Māori than non-Māori agreed with the first statement "Being smokefree is part of the New Zealand way of life" (52.2% vs. 39.2%, *p*=.002), the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced" (69.2% vs. 58.4%, *p*=.006), and the third statement "Cigarettes should not be sold in New Zealand in 10 years" (55.8% vs. 46.1%, *p*=.021).

Table 4.2. 14. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand; by Ethnicity.

		Māori	Non-Māori	Total	*P-value*
Being smokefree is part of the New Zealand way of life. (n=1914)	Agree/strongly agree	60 (39.2)	919 (52.2)	979 (51.1)	.002
	Other*	93 (60.8)	842 (47.8)	935 (48.9)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=1913)	Agree/strongly agree	90 (58.4)	1217 (69.2)	1307 (68.3)	.006
	Other*	64 (41.6)	542 (30.8)	606 (31.7)	
Cigarettes should not be sold in New Zealand in 10 years. (n=1917)	Agree/strongly agree	71 (46.1)	983 (55.8)	1054 (55.0)	.021
	Other*	83 (53.9)	780 (44.2)	863 (45.0)	

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.2.3 E-cigarette Use

4.2.3.1 E-cigarette use; Overall

Of the sample, 45.6% (95% CI = 43.3-47.8) ever vaped, 12.6% (95% CI = 11.1-14.1) currently vaped and 5.1% (95% CI = 4.2–6.2) vaped daily or almost daily. Of vapers, 70.0% never or almost never vaped in indoor smokefree spaces and 63.0% in outdoor smokefree spaces, 5.7% vaped to quit smoking, 16.3% because they enjoyed it, 63.8% vaped out of curiosity and the rest vaped for other reasons; 17.6% vaped daily for a month or more, and 80.3% used nicotine-containing devices. 71.7% of respondents thought e-cigarettes were less harmful than tobacco cigarettes; 72.5% of the sample responded to this item.

Table 4.2.15 shows the responses of participants regarding three statements about e-cigarette use. 33.4% of respondents disagreed with the first statement "If someone vapes around me they are causing me harm because of second-hand vapour", 73.1% with the second statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed", and 53.0% with the third statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed".

Table 4.2. 15. Thoughts of participants on three statements about e-cigarette use

	Disagree/strongly disagree	Other*	Total
If someone vapes around me they are causing me harm because of second-hand vapour	636 (33.4, 31.2-35.5)	1271 (66.6, 64.5-68.8)	1907 (100.0)
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed	1394 (73.1, 71.1-75.1)	513 (26.9, 24.9-29.0)	1907 (100.0)
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed	1008 (53.0, 50.7-55.2)	896 (47.0, 44.8-49.3)	1904 (100.0)

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

4.2.3.2 E-cigarette use; by Age group

Statistically significantly more participants aged <25 years than those aged ≥25 years ever vaped (49.1% vs. 30.3%, $p<.001$), currently vaped (14.0% vs. 6.4%, $p<.001$), vaped out of curiosity (65.3% vs. 52.4%, $p=.011$), and thought e-cigarettes were less harmful than tobacco cigarettes (72.9% vs. 64.6%, $p=.013$), while statistically significantly more participants aged ≥25 years than those aged <25 years reported vaping to quit smoking (18.4% vs. 3.9%, $p<.001$) and vaping daily for a month or more (28.4% vs. 16.0%, $p=.001$) (**Table 4.2.16**).

Table 4.2. 16. E-cigarette use behaviour, reasons for use and perceptions of harm; by age group

			<25 years	≥25 years	Total	*P-value*
Use behaviour	Ever use (n=1914)	Yes	765 (49.1)	108 (30.3)	873 (45.6)	<.001
		No	792 (50.9)	249 (69.7)	1041 (54.4)	
	Current use (n=1930)	Yes	220 (14.0)	23 (6.4)	243 (12.6)	<.001
		No	1350 (86.0)	337 (93.6)	1687 (87.4)	
	Daily use (n=1931)	Yes	86 (5.5)	13 (3.6)	99 (5.1)	.145
		No	1484 (94.5)	348 (96.4)	1832 (94.9)	
	Daily use for a month or more (n=870)	Yes	122 (16.0)	31 (28.4)	153 (17.6)	.001
		No	639 (84.0)	78 (71.6)	717 (82.4)	
	Use of nicotine (n=147)	Yes	95 (80.5)	23 (79.3)	118 (80.3)	.885
		No	23 (19.5)	6 (20.7)	29 (19.7)	
	Use in indoor smokefree spaces (n=464)	No	292 (69.5)	32 (72.7)	324 (69.8)	.660
		Other*	128 (30.5)	12 (27.3)	140 (30.2)	
	Use in outdoor smokefree spaces (n=468)	No	265 (62.6)	29 (64.4)	294 (62.8)	.813
		Other*	158 (37.4)	16 (35.6)	174 (37.2)	
Reasons for use	To quit smoking (n=847)	Yes	29 (3.9)	19 (18.4)	48 (5.7)	<.001
		No	715 (96.1)	84 (81.6)	799 (94.3)	
	For enjoyment (n=847)	Yes	126 (16.9)	12 (11.7)	138 (16.3)	.173
		No	618 (83.1)	91 (88.3)	709 (83.7)	
	Curiosity/just wanted to try them (n=847)	Yes	486 (65.3)	54 (52.4)	540 (63.8)	.011
		No	258 (34.7)	49 (47.6)	307 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1399)	Yes	868 (72.9)	135 (64.6)	1003 (71.7)	.013
		Other†	322 (27.1)	74 (35.4)	396 (28.3)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes sometimes, fairly often and very often. †Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Table 4.2.17 shows how participants responded to the three statements about vaping; statistically significantly more participants aged <25 years disagreed with the first statement (35.9% vs. 22.5%, $p<.001$), while statistically significantly more participants aged ≥25 years disagreed with the third statement (59.2% vs. 51.5%, $p=.009$).

Table 4.2. 17. Disagreement with the three statements about vaping; by Age group

		<25 years	≥25 years	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour (n=1903)	Disagree/strongly disagree	556 (35.9)	80 (22.5)	636 (33.4)	<.001
	Other*	991 (64.1)	276 (77.5)	1267 (66.6)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1904)	Disagree/strongly disagree	1130 (73.0)	261 (73.5)	1391 (73.1)	.827
	Other*	419 (27.0)	94 (26.5)	513 (26.9)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1899)	Disagree/strongly disagree	796 (51.5)	209 (59.2)	1005 (52.9)	.009
	Other*	750 (48.5)	144 (40.8)	894 (47.1)	

***** Includes those who were neutral, agreed or strongly agreed.

4.2.3.3 E-cigarette use; by Gender

Statistically significantly more males than females ever vaped (52.7% vs. 40.3%, $p<.001$), currently vaped (18.4% vs. 8.3%, $p<.001$), vaped daily or almost daily (7.9% vs. 3.0%, $p<.001$), vaped daily for a month or more (23.3% vs. 11.9%, $p<.001$), vaped for enjoyment (18.9% vs. 13.8%, $p=.041$), and thought e-cigarettes were less harmful than tobacco cigarettes (77.0% vs. 67.8%, $p<.001$), while significantly more females than males vaped out of curiosity (70.6% vs. 56.6%, $p<.001$) (**Table 4.2.18**).

Table 4.2. 18. E-cigarette use behaviour, reasons for use and perceptions of harm; by gender

			Male	Female	Total	*P-value*
Use behaviour	Ever use (n=1919)	Yes	430 (52.7)	445 (40.3)	875 (45.6)	<.001
		No	386 (47.3)	658 (59.7)	1044 (54.4)	
	Current use (n=1935)	Yes	151 (18.4)	93 (8.3)	244 (12.6)	<.001
		No	668 (81.6)	1023 (91.7)	1691 (87.4)	
	Daily use (n=1933)	Yes	65 (7.9)	34 (3.0)	99 (5.1)	<.001
		No	753 (92.1)	1081 (97.0)	1834 (94.9)	
	Daily use for a month or more (n=869)	Yes	99 (23.3)	53 (11.9)	152 (17.5)	<.001
		No	325 (76.7)	392 (88.1)	717 (82.5)	
	Use of nicotine (n=148)	Yes	80 (82.5)	39 (76.5)	119 (80.4)	.382
		No	17 (17.5)	12 (23.5)	29 (19.6)	
	Use in indoor smokefree spaces (n=464)	No	172 (67.7)	153 (72.9)	325 (70.0)	.229
		Other*	82 (32.3)	57 (27.1)	139 (30.0)	
	Use in outdoor smokefree spaces (n=469)	No	151 (59.4)	145 (67.4)	296 (63.1)	.074
		Other*	103 (40.6)	70 (32.6)	173 (36.9)	
Reasons for use	To quit smoking (n=848)	Yes	24 (5.8)	24 (5.5)	48 (5.7)	.853
		No	389 (94.2)	411 (94.5)	800 (94.3)	
	For enjoyment (n=848)	Yes	78 (18.9)	60 (13.8)	138 (16.3)	.041
		No	334 (81.1)	376 (86.2)	710 (83.7)	
	Curiosity/just wanted to try them (n=848)	Yes	233 (56.6)	308 (70.6)	541 (63.8)	<.001
		No	179 (43.4)	128 (29.4)	307 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1401)	Yes	455 (77.0)	549 (67.8)	1004 (71.7)	<.001
		Other†	136 (23.0)	261 (32.2)	397 (28.3)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes sometimes, fairly often and very often. †Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes, and don't know.

Table 4.2.19 shows the responses to the three statements about vaping, by gender. Statistically significantly more males than females disagreed with the first statement (42.1% vs. 26.9%, $p<.001$), while significantly more females than males disagreed with the second (75.6% vs. 69.7%, $p=.004$), and third statement (56.3% vs. 48.4%, $p=.001$).

Table 4.2. 19. Disagreement with the three statements about vaping; by Gender

		Male	Female	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour (n=1907)	Disagree/strongly disagree	341 (42.1)	295 (26.9)	636 (33.4)	<.001
	Other*	469 (57.9)	802 (73.1)	1271 (66.6)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1907)	Disagree/strongly disagree	563 (69.7)	831 (75.6)	1394 (73.1)	.004
	Other*	245 (30.3)	268 (24.4)	513 (26.9)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1903)	Disagree/strongly disagree	390 (48.4)	618 (56.3)	1008 (53.0)	.001
	Other*	415 (51.6)	480 (43.7)	895 (47.0)	

***** Includes those who were neutral, agreed or strongly agreed.

4.2.3.4 E-cigarette use; by Ethnicity

Table 4.2.20 shows e-cigarette use by ethnicity; ever use was statistically significantly higher among Māori compared to non-Māori participants (54.6% vs. 44.8%, *p*=.020).

Table 4.2. 20. E-cigarette use behaviour, reasons for use and perceptions of harm; by ethnicity

			Māori	Non-Māori	Total	*P-value*
Use behaviour	Ever use (n=1918)	Yes	83 (54.6)	791 (44.8)	874 (45.6)	.020
		No	69 (45.4)	975 (55.2)	1044 (54.4)	
	Current use (n=1933)	Yes	23 (14.9)	220 (12.4)	243 (12.6)	.356
		No	131 (85.1)	1559 (87.6)	1690 (87.4)	
	Daily use (n=1933)	Yes	12 (7.8)	87 (4.9)	99 (5.1)	.117
		No	142 (92.2)	1692 (95.1)	1834 (94.9)	
	Daily use for a month or more (n=869)	Yes	17 (20.5)	135 (17.2)	152 (17.5)	.451
		No	66 (79.5)	651 (82.8)	717 (82.5)	
	Use of nicotine (n=147)	Yes	13 (81.3)	105 (80.2)	118 (80.3)	.917
		No	3* (18.8)	26 (19.8)	29 (19.7)	
	Use in indoor smokefree spaces (n=466)	No	30 (66.7)	296 (70.3)	326 (70.0)	.612
		Other†	15 (33.3)	125 (29.7)	140 (30.0)	
	Use in outdoor smokefree spaces (n=470)	No	25 (55.6)	271 (63.8)	296 (63.0)	.278
		Other†	20 (44.4)	154 (36.2)	174 (37.0)	
Reasons for use	To quit smoking (n=848)	Yes	5 (6.3)	44 (5.7)	49 (5.8)	.849
		No	75 (93.8)	724 (94.3)	799 (94.2)	
	For enjoyment (n=848)	Yes	8 (10.0)	130 (16.9)	138 (16.3)	.110
		No	72 (90.0)	638 (83.1)	710 (83.7)	
	Curiosity/just wanted to try them (n=849)	Yes	48 (59.3)	494 (64.3)	542 (63.8)	.367
		No	33 (40.7)	274 (35.7)	307 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1402)	Yes	80 (74.1)	925 (71.5)	1005 (71.7)	.566
		Other§	28 (25.9)	369 (28.5)	397 (28.3)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Expected count less than 5. †Includes sometimes, fairly often and very often. §Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes, and don't know.

Table 4.2.21 shows how participants responded to the three statements about vaping. Statistically significantly more Māori than non-Māori disagreed with the first statement (42.1% vs. 32.6%, *p*=.017).

Table 4.2. 21. Disagreement with the three statements about vaping; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour (n=1907)	Disagree/strongly disagree	64 (42.1)	572 (32.6)	636 (33.4)	.017
	Other*	88 (57.9)	1183 (67.4)	1271 (66.6)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n=1907)	Disagree/strongly disagree	108 (71.1)	1286 (73.3)	1394 (73.1)	.553
	Other*	44 (28.9)	469 (26.7)	513 (26.9)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1904)	Disagree/strongly disagree	72 (47.4)	936 (53.4)	1008 (52.9)	.151
	Other*	80 (52.6)	816 (46.6)	896 (47.1)	

***** Includes those who were neutral, agreed or strongly agreed.

4.2.3.5 E-cigarette use; by Smoking status

Statistically significantly more current smokers than non-smokers ever vaped (85.7% vs. 40.5%, $p<.001$), currently vaped (44.5% vs. 8.5%, $p<.001$), vaped daily or almost daily (21.6% vs. 3.0%, $p<.001$), vaped to quit smoking (17.7% vs. 2.5%, $p<.001$), vaped daily for a month or more (36.2% vs. 12.5%, $p<.001$) and used nicotine (93.9% vs. 69.1%, $p<.001$), while statistically significantly more non-smokers than current smokers never or almost never vaped in indoor smokefree spaces (76.5% vs. 55.9%, $p<.001$) or in outdoor smokefree spaces (68.4% vs. 50.7%, $p<.001$), or vaped out of curiosity (71.4% vs. 35.9%, $p<.001$) (**Table 4.2.22**).

Table 4.2. 22. E-cigarette use behaviour, reasons for use and perceptions of harm; by smoking status

			Current smoker	Non-smoker*	Total	*P-value*
Use behaviour	Ever use (n=1919)	Yes	186 (85.7)	689 (40.5)	875 (45.6)	<.001
		No	31 (14.3)	1013 (59.5)	1044 (54.4)	
	Current use (n=1934)	Yes	97 (44.5)	146 (8.5)	243 (12.6)	<.001
		No	121 (55.5)	1570 (91.5)	1691 (87.4)	
	Daily use (n=1934)	Yes	47 (21.6)	52 (3.0)	99 (5.1)	<.001
		No	171 (78.4)	1664 (97.0)	1835 (94.9)	
	Daily use for a month or more (n=871)	Yes	67 (36.2)	86 (12.5)	153 (17.6)	<.001
		No	118 (63.8)	600 (87.5)	718 (82.4)	
	Use of nicotine (n=147)	Yes	62 (93.9)	56 (69.1)	118 (80.3)	<.001
		No	4† (6.1)	25 (30.9)	29 (19.7)	
	Use in indoor smokefree spaces (n=464)	No	81 (55.9)	244 (76.5)	325 (70.0)	<.001
		Other§	64 (44.1)	75 (23.5)	139 (30.0)	
	Use in outdoor smokefree spaces (n=469)	No	74 (50.7)	221 (68.4)	295 (62.9)	<.001
		Other§	72 (49.3)	102 (31.6)	174 (37.1)	
Reasons for use	To quit smoking (n=849)	Yes	32 (17.7)	17 (2.5)	49 (5.8)	<.001
		No	149 (82.3)	651 (97.5)	800 (94.2)	
	For enjoyment (n=848)	Yes	30 (16.7)	108 (16.2)	138 (16.3)	.872
		No	150 (83.3)	560 (83.8)	710 (83.7)	
	Curiosity/just wanted to try them (n=849)	Yes	65 (35.9)	477 (71.4)	542 (63.8)	<.001
		No	116 (64.1)	191 (28.6)	307 (36.2)	
Perceptions of harm	Less harmful than cigarettes (n=1401)	Yes	121 (71.6)	884 (71.8)	1005 (71.7)	.966
		Other‡	48 (28.4)	348 (28.2)	396 (28.3)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of the component cells. *Includes never smokers and smokers who smoke less than once a month. †Expected cell count less than 5. §Includes sometimes, fairly often and very often. ‡Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes, and don't know.

Table 4.2.23 shows how participants responded to the three statements about vaping. Statistically significantly more current smokers than non-smokers disagreed with the first statement (57.4% vs. 30.3%, $p<.001$), and significantly more non-smokers than current smokers disagreed with the second (75.6% vs. 53.7%, $p<.001$) and third statements (54.8% vs. 38.3%, $p<.001$).

Table 4.2. 23. Disagreement with the three statements about vaping; by Smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
If someone vapes around me they are causing me harm because of second-hand vapour (n=1907)	Disagree/strongly disagree	124 (57.4)	512 (30.3)	636 (33.4)	<.001
	Other†	92 (42.6)	1179 (69.7)	1271 (66.6)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed (n= 1908)	Disagree/strongly disagree	116 (53.7)	1279 (75.6)	1395 (73.1)	<.001
	Other†	100 (46.3)	413 (24.4)	513 (26.9)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed (n=1903)	Disagree/strongly disagree	82 (38.3)	926 (54.8)	1008 (53.0)	<.001
	Other†	132 (61.7)	763 (45.2)	895 (47.0)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, agreed or strongly agreed.

4.2.4 The Smokefree 2025 goal

4.2.4.1 Smokefree 2025; Overall

Of all respondents, 47.2% (95% CI = 44.9-49.5) were aware of the Smokefree goal before completing the survey, 96.3% (95% CI = 95.4-97.2) supported it, 90.2% (95% CI = 88.6-91.7) thought the goal can be achieved, and 84.0% (95% CI = 82.1-85.9) thought e-cigarettes/vaping can help achieve it.

4.2.4.2 Smokefree 2025 goal; by Age group

Statistically significantly more participants aged <25 years than those aged ≥25 years were aware of the Smokefree goal (49.5% vs. 37.2%, p<.001) and thought that e-cigarettes/vaping can help achieve it (86.1% vs. 73.8%, p<.001), while significantly more participants aged ≥25 years than those aged <25 years thought the goal can be achieved (94.1% vs. 89.3%, p=.017) (**Table 4.2.24**).

Table 4.2. 24. The awareness of, support and thoughts on the Smokefree 2025 goal; by Age group

		<25 years	≥25 years	Total	*P-value*
Before today, were you aware of this goal? (n=1894)	Yes	763 (49.5)	131 (37.2)	894 (47.2)	<.001
	No	779 (50.5)	221 (62.8)	1000 (52.8)	
Do you support the Smokefree goal? (n=1776)	Definitely/somewhat yes	1389 (96.1)	323 (97.6)	1712 (96.4)	.199
	Other*	56 (3.9)	8 (2.4)	64 (3.6)	
Do you think the Smokefree goal can be achieved? (n=1414)	Definitely/somewhat yes	1021 (89.3)	255 (94.1)	1276 (90.2)	.017
	Other*	122 (10.7)	16 (5.9)	138 (9.8)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1453)	Definitely/somewhat yes	1041 (86.1)	180 (73.8)	1221 (84.0)	<.001
	Other*	168 (13.9)	64 (26.2)	232 (16.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.

*Includes: not really, definitely not, and no opinion.

4.2.4.3 Smokefree 2025; by Gender

Statistically significantly more females than males supported the Smokefree goal (98.1% vs. 93.9%, $p<.001$) and thought it can be achieved (94.8% vs. 83.7%, $p<.001$) (**Table 4.2.25**).

Table 4.2. 25. The awareness of, support and thoughts on the Smokefree 2025 goal; by Gender

		Male	Female	Total	*P-value*
Before today, were you aware of this goal? (n=1899)	Yes	399 (49.4)	498 (45.6)	897 (47.2)	.098
	No	408 (50.6)	594 (54.4)	1002 (52.8)	
Do you support the Smokefree goal? (n=1780)	Definitely/somewhat yes	687 (93.9)	1028 (98.1)	1715 (96.3)	<.001
	Other*	45 (6.1)	20 (1.9)	65 (3.7)	
Do you think the Smokefree goal can be achieved? (n=1415)	Definitely/somewhat yes	481 (83.7)	796 (94.8)	1277 (90.2)	<.001
	Other*	94 (16.3)	44 (5.2)	138 (9.8)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1454)	Definitely/somewhat yes	507 (83.4)	715 (84.5)	1222 (84.0)	.563
	Other*	101 (16.6)	131 (15.5)	232 (16.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.

*Includes: not really, definitely not, and no opinion.

4.2.4.4 Smokefree 2025; by Ethnicity

Statistically significantly more Māori than non-Māori participants were aware of the Smokefree goal (60.0% vs. 46.1%, $p=.001$), while significantly more non-Māori than Māori participants supported it (96.6% vs. 92.9%, $p=.022$), and thought it can be achieved (90.8% vs. 84.2%, $p=.023$) (**Table 4.2.26**).

Table 4.2. 26. The awareness of, support and thoughts on the Smokefree 2025 goal; by Ethnicity

		Māori	Non-Māori	Total	*P-value*
Before today, were you aware of this goal? (n=1897)	Yes	90 (60.0)	806 (46.1)	896 (47.2)	.001
	No	60 (40.0)	941 (53.9)	1001 (52.8)	
Do you support the Smokefree goal? (n=1780)	Definitely/somewhat yes	130 (92.9)	1585 (96.6)	1715 (96.3)	.022
	Other*	10 (7.1)	55 (3.4)	65 (3.7)	
Do you think the Smokefree goal can be achieved? (n=1416)	Definitely/somewhat yes	96 (84.2)	1182 (90.8)	1278 (90.3)	.023
	Other*	18 (15.8)	120 (9.2)	138 (9.7)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1455)	Definitely/somewhat yes	101 (87.1)	1121 (83.7)	1222 (84.0)	.345
	Other*	15 (12.9)	218 (16.3)	233 (16.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells.

*Includes: not really, definitely not, and no opinion.

4.2.4.5 Smokefree 2025; by Smoking Status

Statistically significantly more current smokers than non-smokers were aware of the Smokefree goal (64.5% vs. 45.0%, $p<.001$), while significantly more non-smokers than current smokers supported it (98.0% vs. 79.8%, $p<.001$), and thought it can be achieved (92.5% vs. 69.8%, $p<.001$) (**Table 4.2.27**).

Table 4.2. 27. The awareness of, support and thoughts on the Smokefree 2025 goal; by Smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
Before today, were you aware of this goal? (n=1898)	Yes	138 (64.5)	758 (45.0)	896 (47.2)	<.001
	No	76 (35.5)	926 (55.0)	1002 (52.8)	
Do you support the Smokefree goal? (n=1780)	Definitely/somewhat yes	126 (79.7)	1589 (98.0)	1715 (96.3)	<.001
	Other†	32 (20.3)	33 (2.0)	65 (3.7)	
Do you think the Smokefree goal can be achieved? (n=1415)	Definitely/somewhat yes	97 (69.8)	1180 (92.5)	1277 (90.2)	<.001
	Other†	42 (30.2)	96 (7.5)	138 (9.8)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1454)	Definitely/somewhat yes	138 (86.8)	1084 (83.7)	1222 (84.0)	.316
	Other†	21 (13.2)	211 (16.3)	232 (16.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes: not really, definitely not, and no opinion.

4.2.4.6 Smokefree 2025; by Vaping status

Statistically significantly more current vapers than non-vapers were aware of the Smokefree goal (60.3% vs. 45.3%, $p<.001$) and thought e-cigarettes/vaping can help achieve it (95.7% vs. 82.1%, $p<.001$), while significantly more non-vapers supported the goal (97.0% vs. 91.3%, $p<.001$) and thought it can be achieved (91.5% vs. 80.7%, $p<.001$) (**Table 4.2.28**).

Table 4.2. 28. The awareness of, support and thoughts on the Smokefree 2025 goal; by Vaping status

		Currently vape?		Total	*P-value*
		Yes	No*		
Before today, were you aware of this goal? (n=1898)	Yes	144 (60.3)	752 (45.3)	896 (47.2)	<.001
	No	95 (39.7)	907 (54.7)	1002 (52.8)	
Do you support the Smokefree goal? (n=1779)	Definitely/somewhat yes	178 (91.3)	1537 (97.0)	1715 (96.4)	<.001
	Other†	17 (8.7)	47 (3.0)	64 (3.6)	
Do you think the Smokefree goal can be achieved? (n=1416)	Definitely/somewhat yes	130 (80.7)	1148 (91.5)	1278 (90.3)	<.001
	Other†	31 (19.3)	107 (8.5)	138 (9.7)	
Do you think e-cigarettes/vaping can help achieve the Smokefree goal? (n=1454)	Definitely/somewhat yes	202 (95.7)	1020 (82.1)	1222 (84.0)	<.001
	Other†	9 (4.3)	223 (17.9)	232 (16.0)	

The cells contain rounded weighted counts and sometimes the marginal totals are not exactly the sum of component cells. *Includes never-vapers as well as people who vaped less than once monthly. †Includes: not really, definitely not, and no opinion.

4.2.5 Logistic Regression Analyses

4.2.5.1 The association of vaping with smoking.

A bivariate model was used to investigate the relationship between smoking and vaping. The model, with 1,919 cases included (3 missing cases), contained four independent variables (age, gender, ethnicity, and current smoking). The full model containing all predictors was statistically significant, $\chi 2$ (4, N = 1,919) = 215.258, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not report current vaping.

As shown in **Table 4.2.29**, only three of the independent variables made a unique significant contribution to the model (age, gender, and current smoking). The strongest predictor of reporting current vaping was current smoking, which had an odds ratio of 8.25 (95% CI 5.93-11.48), suggesting that current smokers were over 8 times as likely to be current vapers as non-smokers.

Table 4.2. 29. Logistic regression model predicting likelihood of being a current vaper.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-1.121	.242	.000	.326	.203	.523
Gender	.780	.151	.000	2.183	1.623	2.935
Ethnicity	.026	.263	.920	1.027	.614	1.718
Current smoker	2.110	.169	.000	8.251	5.929	11.482

Reference categories: age (<25 years), gender (female), ethnicity (Māori), and current smoking (non-smoker).

4.2.5.2 The association of history of mental illness (HMI) with smoking and vaping.

A bivariate model was used to investigate the relationship of HMI with smoking and vaping while controlling for age, gender, and ethnicity. The full model (1,671 cases included, 251 missing) containing all predictors was statistically significant, χ^2 (5, N = 1,671) = 67.185, $p < .001$, indicating that the model was able to distinguish between respondents who reported and did not report an HMI.

As shown in **Table 4.2.30**, four of the independent variables made a unique significant contribution to the model (gender, ethnicity, current smoking, and current vaping). Both current smoking and current vaping were significantly associated with an HMI. The strongest predictor

of reporting an HMI was current vaping, which had an odds ratio of 1.89 (95% CI 1.31-2.72) suggesting that current vapers were nearly twice as likely to report an HMI as non-vapers.

Table 4.2. 30. Logistic regression model predicting likelihood of reporting an HMI.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.158	.169	.350	.854	.613	1.189
Gender	-.802	.139	.000	.449	.342	.589
Ethnicity	-.576	.207	.006	.562	.374	.844
Current smoker	.625	.191	.001	1.868	1.286	2.714
Current vaper	.634	.186	.001	1.885	1.308	2.717

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.2.5.3 The relationship between the Smokefree 2025 goal, smoking, and vaping.

Bivariate models were used to investigate the associations between responses on the Smokefree 2025 goal with smoking and vaping while controlling for age, gender, ethnicity, smoking, and vaping.

4.2.5.3.1 Model 1: Awareness vs age, gender, ethnicity, smoking, and vaping

The first model, with 1,806 cases included (48 missing cases), assessed the relationship between awareness of the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was statistically significant, $\chi 2$ (5, N = 1,881) = 62.396, $p < .001$, indicating that the model was able to distinguish between respondents who were aware and unaware of the Smokefree goal.

As shown in **Table 4.2.31**, four of the independent variables made a unique significant contribution to the model (age, ethnicity, current smoking, and current vaping). The strongest predictor of reporting awareness of the Smokefree goal was current smoking, which had an odds ratio of 1.96 (95% CI 1.43-2.70) suggesting that current smokers were nearly 2 times as likely to be aware of the Smokefree goal as non-smokers.

Table 4.2. 31. Logistic regression model predicting likelihood of being aware of the Smokefree goal among participants.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.512	.124	.000	.599	.469	.765
Gender	.095	.097	.323	1.100	.910	1.330
Ethnicity	-.487	.176	.006	.615	.436	.867
Current smoker	.674	.163	.000	1.962	1.426	2.698
Current vaper	.312	.153	.042	1.366	1.011	1.844

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.2.5.3.2 Model 2: Support vs age, gender, ethnicity, smoking, and vaping

The second model, with 1,767 cases included (155 missing cases), assessed the relationship between support for the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was statistically significant, $\chi 2$ (5, N = 1,767) = 92.853, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not support the Smokefree goal.

As shown in **Table 4.2.32**, only two of the independent variables made a unique significant contribution to the model. The strongest predictor of reporting support for the Smokefree goal was current smoking, which had an odds ratio of 0.09 (95% CI 0.05-0.16) suggesting that current smokers had significantly lower odds (and hence lower probability) of supporting the Smokefree goal than non-smokers. Equivalently (and possibly easier to interpret), compared to current smokers, non-smokers had odds of 11.24 (=1/0.089) with 95% CI 6.21-20.41 of supporting the Smokefree goal than current smokers.

Table 4.2. 32. Logistic regression model predicting likelihood of supporting the Smokefree goal.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	.648	.395	.101	1.913	.882	4.148
Gender	-.937	.289	.001	.392	.223	.690
Ethnicity	.575	.392	.143	1.777	.824	3.834
Current smoker	-2.417	.303	.000	.089	.049	.161
Current vaper	.208	.352	.554	1.232	.618	2.454

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.2.5.3.3 Model 3: Belief that it can be achieved vs age, gender, ethnicity, smoking, and vaping

The third model, with 1,384 cases included (538 missing cases), assessed the relationship between belief that the Smokefree goal can be achieved with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant, $\chi 2$ (5, N = 1,384) = 100.853, $p < .001$, indicating that the model was able to distinguish between respondents who did and did not believe that the Smokefree goal can be achieved.

As shown in **Table 4.2.33**, only three of the independent variables made a unique significant contribution to the model (age, gender, and current smoking). The strongest predictor of believing that the Smokefree goal can be achieved was current smoking, which had an odds ratio of 0.226 (95% CI 0.14-0.36) suggesting that current smokers had significantly lower odds (and hence lower probability) of believing that the Smokefree goal is achievable than non-smokers. Equivalently (and possibly easier to interpret), compared to current smokers, non-smokers had odds of 4.42 (=1/0.226) with 95% CI 2.75-7.09 of believing that the Smokefree goal is achievable than current smokers.

Table 4.2. 33. Logistic regression model predicting likelihood of believing that the Smokefree goal can be achieved.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	.837	.285	.003	2.310	1.321	4.037
Gender	-1.151	.199	.000	.316	.214	.468
Ethnicity	.431	.296	.145	1.538	.861	2.748
Current smoker	-1.487	.241	.000	.226	.141	.363
Current vaper	-.070	.265	.792	.933	.554	1.568

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.2.5.3.4 Model 4: Belief that e-cigarettes/vaping can help to achieve it: by age, gender, ethnicity, smoking, and vaping

The fourth model, with 1,447 cases included (475 missing cases), assessed the relationship between belief that e-cigarettes/vaping can help to achieve the Smokefree goal with five independent variables (age, gender, ethnicity, current smoking, and current vaping). The full model containing all predictors was significant, $\chi 2$ (5, N = 1,447) = 51.177, $p < .001$, indicating that the model was able to distinguish between respondents who did and did not believe that e-cigarettes/vaping can help to achieve the Smokefree goal.

As shown in **Table 4.2.34**, only two of the independent variables made a unique significant contribution to the model (age and current vaping). The strongest predictor of believing that e-cigarettes/vaping can help achieve the Smokefree goal was current vaping, which had an odds ratio of 4.90 (95% CI 2.42-9.92) suggesting that current vapers were nearly 5 times as likely to believe that e-cigarettes/vaping can help to achieve the Smokefree goal as non-vapers.

Table 4.2. 34. Logistic regression model predicting likelihood of believing that e-cigarettes/vaping can help to achieve the Smokefree goal.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	-.698	.170	.000	.498	.356	.695
Gender	-.160	.149	.284	.852	.636	1.142
Ethnicity	-.206	.292	.480	.814	.459	1.442
Current smoker	-.204	.269	.448	.815	.481	1.382
Current vaper	1.589	.360	.000	4.900	2.420	9.921

Reference categories: age (<25 years), gender (female), ethnicity (Māori), current smoking (non-smoker), and current vaping (non-vaper).

4.2.6 Key findings of T2 survey

4.2.6.1 Tobacco Use

- Overall, 48.5% (95% CI = 46.3-50.8) of participants ever smoked, 11.3% (95% CI = 9.9-12.8) were current smokers, and 4.5% (95% CI = 3.6-5.5) smoked at least once daily. Of current smokers: 70.0% smoked 1-5 cigarettes/day, 67.1% smoked their first cigarette after more than 60 minutes of waking up, 90.6% never or almost never smoked in indoor and 67.8% in outdoor smokefree spaces, 61.1% planned to quit smoking at some point, and 42.4% had tried to quit smoking (69.1% made 1-3 serious attempts).
- Concerning the smoking intentions of respondents in response to simulated price increases of $5.00, $10.00, $15.00 or >$15.00 per packet of their regular cigarettes or RYO tobacco, the proportion of students who would smoke the same amount declined, while the proportion of students who would switch to e-cigarettes, or quit smoking, increased at all price levels.
- The majority of respondents agreed/strongly agreed with the three statements about potentially new smokefree policies for New Zealand: 51.2% agreed with "Being smokefree is New Zealand way of life", 68.3% agreed with "The number of places allowed to sell cigarettes and tobacco should be reduced", and 55.0% agreed with "Cigarettes should no longer be sold in New Zealand in 10 years". Current smokers were significantly less likely than non-smokers to agree with all three statements: first statement (23.7% vs 54.6%, $p<.001$), second statement (30.7% vs 73.1%, $p<.001$) and third statement (21.4% vs 59.3%, $p<.001$).
- Participants aged ≥25 years were significantly more likely to report ever smoking (55.0% vs 47.1%, $p=.007$), smoking at least daily (7.8% vs 3.8%, $p=.001$), smoking the first cigarette within 60 minutes of waking (46.0% vs 29.6%, $p=.028$), planning to quit smoking (74.5% vs 57.7%, $p=.028$), and making 1-3 serious quit smoking attempts (85.2% vs 62.8%, $p=.031$).
- Males were significantly more likely to report ever smoking (56.3% vs 42.9%, $p<.001$), current smoking (16.4% vs 7.5%, $p<.001$), and daily smoking (7.0% vs 2.7%, $p<.001$) than females, while significantly more females reported not smoking in outdoor smokefree spaces (75.5% vs 62.5%, $p=.030$) and trying to quit smoking (51.4% vs 35.6%, $p=.012$).
- Māori were significantly more likely than non-Māori to report ever smoking (62.3% vs 47.3%, $p<.001$) and current smoking (18.8% vs 10.6%, $p=.002$).

4.2.6.2 E-cigarette Use

- Overall, 45.6% (95% CI = 43.3-47.8) of participants had ever vaped, 12.6% (95% CI = 11.1-14.1) were current vapers, and 5.1% (95% CI = 4.2–6.2) vaped daily or almost daily. Of vapers, 70.0% never or almost never vaped in indoor smokefree spaces and 63.0% in outdoor smokefree spaces, 5.7% vaped to quit smoking, 16.3% for enjoyment and 63.8% vaped out of curiosity/just wanted to try them, and 80.3% of those who had vaped daily for a month or more used nicotine.
- Regardless of vaping status, 71.7% of respondents thought e-cigarettes were less harmful than tobacco cigarettes.
    - Concerning the three statements about vaping, 33.4% disagreed/strongly disagreed with the first statement "If someone vapes around me they are causing me harm because of second-hand vapour", 73.1% disagreed/strongly disagreed with the second statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed", and 53.0% disagreed/strongly disagreed with the third statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed".
        - Participants aged <25 years were more likely than participants aged ≥25 years to disagree with the first statement (35.9% vs 22.5%, p<.001), but less likely to disagree with the third statement (51.5% vs 59.2%, p=.009).
        - Males were more likely than females to disagree with the first statement (42.1% vs 26.9%, p<.001), but less likely to disagree with the second (69.7% vs 75.6%, p=.004) and third statements (48.3% vs 56.3%, p=.001).
        - Māori were more likely that non-Māori to disagree with the first statement (42.1% vs 32.6%, p=.017).
        - Current smokers were more likely than non-smokers to disagree with the first statement (57.4% vs 30.3%, p<.001), but less likely to disagree with the second (53.7% vs 75.6%, p<.001) and third statements (38.3% vs 54.8%, p<.001).
- Participants aged <25 years were significantly more likely than those aged ≥25 years to report ever vaping (49.1% vs 30.3%, p<.001), currently vaping (14.0% vs 6.4%, p<.001), vaping out of curiosity (65.3% vs 52.4%, p=.011), and thought that e-cigarettes were less harmful than tobacco cigarettes (72.9% vs 64.6%, p=.013), while significantly participants aged ≥25 years than those aged <25 years vaping daily for a month or more (28.4% vs 16.0%, p=.001) and vaping to quit smoking (18.4% vs 3.9%, p<.001).

- Males were significantly more likely than females to report ever vaping (52.7% vs 40.3%, $p<.001$), current vaping (18.4% vs 8.3%, $p<.001$), and daily vaping (7.9% vs 3.0%, $p<.001$), vaping daily for a month or more (23.3% vs 11.9%, $p<.001$), vaping for enjoyment (18.9% vs 13.8%, $p=.041$), and thought that e-cigarettes were less harmful than tobacco cigarettes (77.0% vs 67.8%, $p<.001$), while significantly more females reported vaping out of curiosity (70.6% vs 56.6%, $p<.001$).
- Māori were significantly more likely to report ever vaping than non-Māori (54.6% vs 44.8%, $p=.020$).
- Current smokers were significantly more likely than non-smokers to report ever vaping (85.7% vs 40.5%, $p<.001$), current vaping (44.5% vs 8.5%, $p<.001$), daily or almost daily vaping (21.6% vs 3.0%, $p<.001$), vaping daily for a month or more (36.2% vs 12.5%, $p<.001$), vaping to quit (17.7% vs 2.5%, $p<.001$), and using nicotine (93.9% vs 69.1%, $p<.001$), while non-smokers were significantly more likely to report never or almost never vaping in indoor smokefree spaces (76.5% vs 55.9%, $p<.001$) or outdoor smokefree spaces (68.4% vs 50.7%, $p<.001$), and vaping out of curiosity (71.4% vs 35.9%, $p<.001$).

4.2.6.3 The Smokefree 2025 goal

- Overall, 47.2% (95% CI = 44.9-49.5) of respondents were aware of the Smokefree goal, 96.3% (95% CI = 95.4-97.2) supported it, 90.2% (95% CI = 88.6-91.7) thought it can be achieved, and 84.0% (95% CI = 82.1-85.9) thought e-cigarettes/vaping can help achieve it.
- Participants aged <25 years were significantly more likely than those aged ≥25 years to be aware of the goal (49.5% vs 37.2%, $p<.001$) and to think that e-cigarettes/vaping can help achieve it (86.1% vs. 73.8%, $p<.001$), but less likely to think that it can be achieved (89.3% vs 94.1%, $p=.017$).
- Females were significantly more likely than males to support the goal (98.1% vs 93.9%, $p<.001$) and to think that it can be achieved (94.8% vs 83.7%, $p<.001$).
- Māori were significantly more likely than non-Māori to be aware of the Smokefree goal (60.0% vs 46.1%, $p=.001$), but less likely to support it (92.9% vs 96.6%, $p=.022$) or to think that it can be achieved (84.2% vs 90.8%, $p=.023$).
- Current smokers were significantly more likely than non-smokers to be aware of the Smokefree goal (64.5% vs 45.0%, $p<.001$), but less likely to support it (79.8% vs 98.0%, $p<.001$) or to think that it can be achieved (69.8% vs 92.5%, $p<.001$).
- Current vapers were significantly more likely than non-vapers to be aware of the Smokefree goal (60.3% vs 45.3%, $p<.001$) and to think e-cigarettes/vaping can help achieve it (95.7%

vs 82.1%, $p<.001$), but less likely to support it (91.3% vs 97.0%, $p<.001$) or to think that it can be achieved (80.7% vs 91.5% vs, $p<.001$).

4.2.6.4 Logistic Regression Analyses

- Vaping and smoking: participants aged <25 years were 3.07 times more likely than participants aged ≥25 years (95% CI 1.91-4.93); males were 2.18 times more likely than females (95% CI 1.62-2.94), and current smokers were over 8 times more likely than non-smokers (OR 8.25, 95% CI 5.93-11.48), to report current vaping.
- HMI and smoking and vaping: females were over 2 times more likely than males (OR 2.23, 95% CI 1.70-2.92); Māori were 1.78 times more likely than non-Māori (95% CI 1.18-2.67); current smokers were 1.87 times more likely than non-smokers (95% CI 1.29-2.71), and current vapers were 1.89 times more likely than non-vapers (95% CI 1.31-2.72), to report an HMI.
- The Smokefree goal and smoking and vaping:
    - Awareness: participants aged <25 years were 1.67 times as likely as participants aged ≥25 years (95% CI 1.31-2.13); Māori were 1.63 times as likely as non-Māori (95% CI 1.15-2.29); current smokers were 1.96 times as likely as non-smokers (95% CI 1.43-2.70), and current vapers were 1.37 as likely as non-vapers (95% CI 1.01-1.84), to be aware of the Smokefree goal.
    - Support: females were 2.55 times as likely as males (95% CI 1.45-4.48) and non-smokers were over 11 times as likely as current smokers (OR 11.24, 95% CI 6.21-20.41), to support the Smokefree goal.
    - Belief that the goal can be achieved: participants aged ≥25 years were 2.31 times as likely as participants aged <25 years (95% CI 1.32-4.04), females were 3.16 times as likely as males (95% CI 2.14-4.67), and non-smokers were 4.42 times as likely as current smokers (95% CI 2.75-7.09), to believe that the Smokefree goal can be achieved.
    - Belief that e-cigarettes/vaping can help to achieve the Smokefree goal: participants aged <25 years were 2.01 times as likely as participants aged ≥25 years (95% CI 1.44-2.81) and current vapers were nearly 5 times as likely as non-vapers (OR 4.90, 95% CI 2.42-9.92), to believe that e-cigarettes/vaping can help to achieve the Smokefree goal.

CHAPTER 5 – RESULTS (2)

This chapter provides detailed findings of the Australian component of the research. It describes the demographic characteristics of participants and presents the results of smoking, vaping and participant health in the previous 12 months. Furthermore, the associations between smoking, vaping and participant health are presented.

5.1 Demographic characteristics

A total of 5,172 students took part in the survey online, between August and November 2017 and all were included in the analyses. The demographic characteristics of participants are summarised in **Table 5.1**.

Table 5. 1. The demographic characteristics of participants

Variable	Sample (n = 5172) %
Age	
<18 years	112 (2.2)
18-24 years	3431 (66.3)
25-29 years	649 (12.5)
30-34 years	294 (5.7)
35-39 years	143 (2.8)
40-44 years	86 (1.7)
45-49 years	66 (1.3)
>50 years	89 (1.7)
Missing age	302 (5.8)
Gender	
Male	1834 (35.5)
Female	3123 (60.4)
Other	19 (0.4)
X (Indeterminate, Intersex, Unspecified)	21 (0.4)
Missing data	175 (3.4)
Ethnicity	
Australian European	3063 (59.2)
Australian Aboriginal	64 (1.2)
Torres Strait Islander	9 (0.2)
Pacific Islander	47 (0.9)
NZ European	134 (2.6)
NZ Māori	28 (0.5)
Other	1845 (35.7)
Don't know	180 (3.5)

5.2 Tobacco Use

5.2.1 Tobacco use; Overall

43.5% of the sample (95% CI = 42.1-44.8) reported ever smoked, 8.6% (95% CI = 7.9-9.4) currently smoked and 5.0% (95% CI = 4.4-5.6) smoked at least once a day.

Of current smokers, 61.9% smoked 1-5 cigarettes/day and 38.1% smoked more than 5 cigarettes/day, 31.9% smoked their first cigarette within 60 minutes of waking up and 68.1% after more than 60 minutes of waking, 98.3% reported never or almost never smoking in indoor and 83.5% in outdoor smokefree spaces, 61.3% planned to quit smoking, 13.3% tried to quit smoking in the last 12 months, and 78.4% of those made 1-3 serious quit smoking attempts.

Participants were asked to respond to three statements about tobacco use in Australia and 92.2% of respondents agreed with the first statement "I prefer to be in a smokefree environment", 82.1% agreed with the second statement "The number of places allowed to sell cigarettes and tobacco should be reduced", and 75.9% agreed with the third statement "Cigarettes and tobacco should not be sold in Australia in 10 years" (**Table 5.2**).

Table 5. 2. How participants agreed or disagreed with three statements on potentially new smokefree policies for Australia

	Agree/strongly agree	Other*	Total
I prefer to be in a smokefree environment.	4008 (92.2, 91.3-93.0)	340 (7.8, 7.0-8.7)	4348 (100.0)
The number of places allowed to sell cigarettes and tobacco should be reduced.	3561 (82.1, 80.9-83.2)	779 (17.9, 16.8-19.1)	4340 (100.0)
Cigarettes should not be sold in Australia in 10 years.	3292 (75.9, 74.6-77.1)	1048 (24.1, 22.9-25.5)	4340 (100.0)

*Includes those who strongly disagreed, disagreed, were neutral or had no opinion.

Table 5.3 illustrates the responses of participants, by smoking status, to the three statements about potentially new smokefree policies for Australia. Current smokers were statistically significantly less likely than non-smokers to agree with all three statements: first statement (51.8% vs 96.1%, $p<.001$), second statement (29.1% vs 87.1%, $p<.001$), and third statement (23.4% vs 80.9%, $p<.001$).

Table 5. 3. How participants agreed or disagreed with three statements on potentially new smokefree policies for Australia; by Smoking status.

		Current smoker?		Total	*P-value*
		Yes	No*		
I prefer to be in a smokefree environment. (n=4348)	Agree/strongly agree	198 (51.8)	3810 (96.1)	4008 (92.2)	<.001
	Other†	184 (48.2)	156 (3.9)	340 (7.8)	
The number of places allowed to sell cigarettes and tobacco should be reduced. (n=4340)	Agree/strongly agree	111 (29.1)	3450 (87.1)	3561 (82.1)	<.001
	Other†	270 (70.9)	509 (12.9)	779 (17.9)	
Cigarettes should not be sold in Australia in 10 years. (n=4340)	Agree/strongly agree	89 (23.4)	3203 (80.9)	3292 (75.9)	<.001
	Other†	292 (76.6)	756 (19.1)	1048 (24.1)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

5.2.2 Tobacco use; by Age group

Statistically significantly more participants aged ≥25 years than those aged <25 years reported ever smoking (63.5% vs. 38.3%, $p<.001$), smoking at least once daily (6.4% vs. 4.7%, $p=.020$), smoking more than 5 cigarettes/day on the days they smoked (48.5% vs. 33.8%, $p=.003$), and smoking their first cigarette within 60 minutes of waking (38.2% vs. 28.6%, $p=.042$) (**Table 5.4**).

Table 5. 4. Smoking patterns of participants; by Age group

		<25 years	≥25 years	Total	*P-value*
Ever smoked? (n=4856)	Yes	1353 (38.3)	841 (63.5)	2194 (45.2)	<.001
	No	2178 (61.7)	484 (36.5)	2662 (54.8)	
Currently smoke? (n=4870)	Yes	309 (8.7)	130 (9.8)	439 (9.0)	.243
	No	3234 (91.3)	1197 (90.2)	4431 (91.0)	
Smoke at least daily? (n=4870)	Yes	168 (4.7)	85 (6.4)	253 (5.2)	.020
	No†	3375 (95.3)	1242 (93.6)	4617 (94.8)	
Number of cigarettes/day in the past 30 days (n=459)	1-5 cigarettes	215 (66.2)	69 (51.5)	284 (61.9)	.003
	>5 cigarettes	110 (33.8)	65 (48.5)	175 (38.1)	
Time to first cigarette (n=468)	Within 60 minutes	95 (28.6)	52 (38.2)	147 (31.4)	.042
	After 60 minutes	237 (71.4)	84 (61.8)	321 (68.6)	
Smoking in indoor smokefree spaces (n=467)	Never/almost never	324 (97.6)	135 (100.0)	459 (98.3)	.069
	Other	8 (2.4)	0 (0.0)	8 (1.7)	
Smoking in outdoor smokefree spaces (n=467)	Never/almost never	275 (82.8)	115 (85.2)	390 (83.5)	.534
	Other	57 (17.2)	20 (14.8)	77 (16.5)	
Quit intentions (n=467)	Plans to quit	208 (62.7)	79 (58.5)	287 (61.5)	.406
	Not planning to quit	124 (37.3)	56 (41.5)	180 (38.5)	
Attempted to quit in the last 12 months? (n=2191)	Yes	189 (14.0)	101 (12.0)	290 (13.2)	.165
	No	1158 (86.0)	743 (88.0)	1901 (86.8)	
Number of serious quit attempts in the last 12 months (n=283)	1-3 attempts	145 (79.2)	78 (78.0)	223 (78.8)	.808
	>3 attempts	38 (20.8)	22 (22.0)	60 (21.2)	

*Expected count less than 5. †Includes those who smoked at least weekly, monthly and less than monthly.

Table 5.5 shows the response of participants, by age, to three statements about smoking in Australia. Statistically significantly more participants aged <25 years than those aged ≥25 years agreed with the third statement "Cigarettes and tobacco should be sold in Australia in 10 years" (76.9% vs. 73.6%, *p*=.020).

Table 5. 5. How participants agreed or disagreed with three statements on potentially new smokefree policies for Australia; by Age group

		<25 years	≥25 years	Total	*P-value*
I prefer to be in a smokefree environment. (n=4295)	Agree/strongly agree	2820 (91.7)	1138 (93.2)	3958 (92.2)	.107
	Other*	254 (8.3)	83 (6.8)	337 (7.8)	
The number of places allowed to sell cigarettes and tobacco be reduced. (n=4287)	Agree/strongly agree	2536 (82.6)	982 (80.6)	3518 (82.1)	.122
	Other*	533 (17.4)	236 (19.4)	769 (17.9)	
Cigarettes and tobacco should be sold in Australia in 10 years. (n=4287)	Agree/strongly agree	2361 (76.9)	896 (73.6)	3257 (76.0)	.020
	Other*	708 (23.1)	322 (26.4)	1030 (24.0)	

*Includes those who disagreed, strongly disagreed, were neutral or had no opinion.

5.2.3 Tobacco use; by Gender

Statistically significantly more males than females reported ever smoking (54.6% vs. 39.6%, $p<.001$), current smoking (13.5% vs. 6.2%, $p<.001$), smoking daily (8.2% vs. 3.4%, $p<.001$), smoking more than five cigarettes per day on the day they smoked (42.5% vs. 33.2%, $p=.040$), and ever trying to quit smoking (17.2% vs. 10.0%, $p<.001$), but significantly more females than males reported never/almost never smoking in indoor smokefree spaces (100.0% vs. 96.9%, $p=.010$) (**Table 5.6**).

Table 5. 6. Smoking patterns of participants; by Gender

		Male	Female	Total	*P-value*
Ever smoked? (n=4944)	Yes	1001 (54.6)	1233 (39.6)	2234 (45.2)	<.001
	No	831 (45.4)	1879 (60.4)	2710 (54.8)	
Currently smoke? (n=4957)	Yes	247 (13.5)	194 (6.2)	441 (8.9)	<.001
	No	1587 (86.5)	2929 (93.8)	4516 (91.1)	
Smoke at least daily? (n=4957)	Yes	150 (8.2)	106 (3.4)	256 (5.2)	<.001
	No†	1684 (91.8)	3017 (96.6)	4701 (94.8)	
Number of cigarettes/day in the past 30 days (n=462)	1-5 cigarettes	146 (57.5)	139 (66.8)	285 (61.7)	.040
	>5 cigarettes	108 (42.5)	69 (33.2)	177 (38.3)	
Time to first cigarette (n=470)	Within 60 minutes	92 (35.5)	59 (28.0)	151 (32.1)	.081
	After 60 minutes	167 (64.5)	152 (72.0)	319 (67.9)	
Smoking in indoor smokefree spaces (n=469)	Never/almost never	250 (96.9)	211 (100.0)	461 (98.3)	.010
	Other	8 (3.1)	0* (0.0)	8 (1.7)	
Smoking in outdoor smokefree spaces (n=469)	Never/almost never	209 (81.0)	184 (87.2)	393 (83.8)	.070
	Other	49 (19.0)	27 (12.8)	76 (16.2)	
Quit intentions (n=469)	Plans to quit	168 (65.1)	122 (57.8)	290 (61.8)	.106
	Not planning to quit	90 (34.9)	89 (42.2)	179 (38.2)	
Attempted to quit in the last 12 months? (n=2232)	Yes	172 (17.2)	123 (10.0)	295 (13.2)	<.001
	No	826 (82.8)	1111 (90.0)	1937 (86.8)	
Number of serious quit attempts in the last 12 months (n=288)	1-3 attempts	127 (74.7)	99 (83.9)	226 (78.5)	.062
	>3 attempts	43 (25.3)	19 (16.1)	62 (21.5)	

*Expected count less than 5. †Includes those who smoked at least weekly, monthly, and less than monthly.

Table 5.7 shows the response of participants, by gender, to three statements about smoking in Australia. Significantly more females than males agreed with the first statement "I prefer to be in a smokefree environment" (95.0% vs. 87.4%, $p<.001$), the second statement "The number of places allowed to sell cigarettes and tobacco be reduced" (87.6% vs. 72.5%, $p<.001$), and third statement "Cigarettes and tobacco should be sold in Australia in 10 years" (81.5% vs. 66.4%, $p<.001$).

Table 5. 7. How participants agreed or disagreed with three statements on potentially new smokefree policies for Australia; by Gender

		Male	Female	Total	*P-value*
I prefer to be in a smokefree environment. (n=4312)	Agree/strongly agree	1369 (87.4)	2610 (95.0)	3979 (92.3)	<.001
	Other*	197 (12.6)	136 (5.0)	333 (7.7)	
The number of places allowed to sell cigarettes and tobacco be reduced. (n=4304)	Agree/strongly agree	1131 (72.5)	2403 (87.6)	3534 (82.1)	<.001
	Other*	429 (27.5)	341 (12.4)	770 (17.9)	
Cigarettes and tobacco should be sold in Australia in 10 years. (n=4304)	Agree/strongly agree	1036 (66.4)	2237 (81.5)	3273 (76.0)	<.001
	Other*	524 (33.6)	507 (18.5)	1031 (24.0)	

*Includes those who strongly disagreed, disagreed, were neutral or had no opinion.

5.3 E-cigarette Use

5.3.1 E-cigarette use; Overall

19.9% of the sample (95% CI = 18.8-21.0) reported ever vaping, 1.8% (95% CI = 1.4-2.2) currently vaped and 0.7% (95% CI = 0.5-0.9) vaped daily or almost daily. Of vapers, 91.5% reported never/almost never vaping in indoor smokefree spaces, and 84.5% in outdoor smokefree spaces; 5.8% vaped to quit smoking, 8.8% vaped for enjoyment, 71.2% vaped out of curiosity and the rest vaped for other reasons. Of vapers, 9.3% vaped daily for a month or more and 40.1% used nicotine-containing devices. Regardless of vaping status, 71.8% of respondents thought e-cigarettes were less harmful than tobacco cigarettes; 71.9% of the sample responded.

Table 5.8 shows the responses of participants regarding three statements about e-cigarette use. Overall, 19.5% of respondents disagreed with the first statement "If someone vapes (uses an e-cigarette) around me they are causing me harm because of second-hand vapour", 83.7% disagreed with the second statement "People should be allowed to use e-cigarettes in indoor places where smoking is not allowed", and 61.0% disagreed with the third statement "People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed".

Table 5. 8. Thoughts of participants on three statements about vaping

	Disagree/strongly disagree	Other*	Total
If someone vapes around me they are causing me harm because of second-hand vapour.	846 (19.5, 18.3-20.7)	3503 (80.5, 79.3-81.7)	4349 (100.0)
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.	3634 (83.7, 82.6-84.8)	707 (16.3, 15.2-17.4)	4341 (100.0)
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.	2647 (61.0, 59.5-62.4)	1694 (39.0, 37.6-40.5)	4341 (100.0)

*Includes those who were neutral, agreed, strongly agreed or had no opinion.

5.3.2 E-cigarette use; by Age

Statistically significantly more participants aged ≥25 years than those aged <25 years reported vaping daily or almost daily (1.4% vs. 0.5%, p=.001), vaping daily for a month or more (18.0% vs. 6.4%, p<.001), vaping to quit smoking (12.7% vs. 3.4%, p<.001), and using nicotine-containing devices (58.4% vs. 34.1%, p<.001), while significantly more participants aged <25 years than those aged ≥25 years reported never/almost never vaping in indoor (93.0% vs. 85.3%, p=.045) or outdoor (86.9% vs. 75.0%, p=.017) smokefree spaces, vaped out of curiosity (74.2% vs. 63.1%, p=.001), and thought that e-cigarettes were less harmful than tobacco cigarettes (75.1% vs. 63.9%, p<.001) (**Table 5.9**).

Table 5. 9. E-cigarette use behaviour, reasons for use and perceptions of harm; by age group

			<25 years	≥25 years	Total	*P-value*
Use behaviour	Ever use (n=4822)	Yes	754 (21.5)	257 (19.5)	1011 (21.0)	.133
		No	2752 (78.5)	1059 (80.5)	3811 (79.0)	
	Current use (n=4870)	Yes	58 (1.6)	32 (2.4)	90 (1.8)	.074
		No	3485 (98.4)	1295 (97.6)	4780 (98.2)	
	Daily use (n=4870)	Yes	17 (0.5)	18 (1.4)	35 (0.7)	.001
		No	3526 (99.5)	1309 (98.6)	4835 (99.3)	
	Daily use for a month or more (n=995)	Yes	47 (6.4)	46 (18.0)	93 (9.3)	<.001
		No	692 (93.6)	210 (82.0)	902 (90.7)	
	Use of nicotine (n=759)	Yes	194 (34.1)	111 (58.4)	305 (40.2)	<.001
		No	375 (65.9)	79 (41.6)	454 (59.8)	
	Use in indoor smokefree spaces (n=312)	No	227 (93.0)	58 (85.3)	285 (91.3)	.045
		Other*	17 (7.0)	10 (14.7)	27 (8.7)	
	Use in outdoor smokefree spaces (n=312)	No	212 (86.9)	51 (75.0)	263 (84.3)	.017
		Other*	32 (13.1)	17 (25.0)	49 (15.7)	
Reasons for use	To quit smoking (n=1003)	Yes	25 (3.4)	33 (12.7)	58 (5.8)	<.001
		No	718 (96.6)	227 (87.3)	945 (94.2)	
	For enjoyment (n=1003)	Yes	66 (8.9)	23 (8.8)	89 (8.9)	.986
		No	677 (91.1)	237 (91.2)	914 (91.1)	
	Curiosity/just wanted to try them (n=1003)	Yes	551 (74.2)	164 (63.1)	715 (71.3)	.001
		No	192 (25.8)	96 (36.9)	288 (28.7)	
Perceptions of harm	Less harmful than cigarettes (n=3628)	Yes	2007 (75.1)	610 (63.9)	2617 (72.1)	<.001
		Other†	667 (24.9)	344 (36.1)	1011 (27.9)	

*Includes sometimes, fairly often and very often. †Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Statistically significantly more participants aged <25 years than those aged ≥25 years disagreed with the second statement "People should be allowed to use e-cigarettes in indoor places where smoking is not allowed" (84.8%% vs. 81.1%, *p*=.003) (**Table 5.10**).

Table 5. 10. Disagreement with the three statements about vaping; by Age group

		<25 years	≥25 years	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour. (n=4296)	Disagree/strongly disagree	608 (19.8)	230 (18.8)	838 (19.5)	.485
	Other*	2467 (80.2)	991 (81.2)	3458 (80.5)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed. (n=4288)	Disagree/strongly disagree	2603 (84.8)	989 (81.1)	3592 (83.8)	.003
	Other*	466 (15.2)	230 (18.9)	696 (16.2)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed. (n=4288)	Disagree/strongly disagree	1887 (61.5)	726 (59.6)	2613 (60.9)	.243
	Other*	1182 (38.5)	493 (40.4)	1675 (39.1)	

***** Includes those who were neutral, agreed or strongly agreed.

5.3.3 E-cigarette use; by Gender

Significantly more males than females reported ever vaping (28.6% vs. 16.4%, $p<.001$), current vaping (3.6% vs. 0.8%, $p<.001$), vaping daily or almost daily (1.5% vs. 0.2%, $p<.001$), vaping daily for a month or more (12.1% vs. 6.3%, $p<.001$), vaping to quit (7.2% vs. 4.3%, $p=.048$), or for enjoyment (11.5% vs. 6.1%, $p=.002$), using nicotine-containing devices (47.0% vs. 33.0%, $p<.001$), and thought that e-cigarettes were less harmful than tobacco cigarettes (75.3% vs. 69.6%, $p<.001$), while significantly more females than males reported not vaping in indoor (95.2% vs. 88.9%, $p=.051$) and outdoor (90.4% vs. 80.4%, $p=.017$) smokefree spaces, or vaping out of curiosity (77.1% vs. 65.6%, $p<.001$) (**Table 5.11**).

Table 5. 11. E-cigarette use behaviour, reasons for use and perceptions of harm; by gender

			Male	Female	Total	*P-value*
Use behaviour	Ever use (n=4911)	Yes	518 (28.6)	508 (16.4)	1026 (20.9)	<.001
		No	1296 (71.4)	2589 (83.6)	3885 (79.1)	
	Current use (n=4957)	Yes	66 (3.6)	24 (0.8)	90 (1.8)	<.001
		No	1768 (96.4)	3099 (99.2)	4867 (98.2)	
	Daily use (n=4957)	Yes	27 (1.5)	7 (0.2)	34 (0.7)	<.001
		No	1807 (98.5)	3116 (99.8)	4923 (99.3)	
	Daily use for a month or more (n=1010)	Yes	61 (12.1)	32 (6.3)	93 (9.2)	.001
		No	443 (87.9)	474 (93.7)	917 (90.8)	
	Use of nicotine (n=770)	Yes	185 (47.0)	124 (33.0)	309 (40.1)	<.001
		No	209 (53.0)	252 (67.0)	461 (59.9)	
	Use in indoor smokefree spaces (n=314)	No	168 (88.9)	119 (95.2)	287 (91.4)	.051
		Other*	21 (11.1)	6 (4.8)	27 (8.6)	
	Use in outdoor smokefree spaces (n=314)	No	152 (80.4)	113 (90.4)	265 (84.4)	.017
		Other*	37 (19.6)	12 (9.6)	49 (15.6)	
Reasons for use	To quit smoking (n=1017)	Yes	37 (7.2)	22 (4.3)	59 (5.8)	.048
		No	474 (92.8)	484 (95.7)	958 (94.2)	
	For enjoyment (n=1017)	Yes	59 (11.5)	31 (6.1)	90 (8.8)	.002
		No	452 (88.5)	475 (93.9)	927 (91.2)	
	Curiosity/just wanted to try them (n=1017)	Yes	335 (65.6)	390 (77.1)	725 (71.3)	<.001
		No	176 (34.4)	116 (22.9)	292 (28.7)	
Perceptions of harm	Less harmful than cigarettes (n=3692)	Yes	1042 (75.3)	1607 (69.6)	2649 (71.7)	<.001
		Other†	342 (24.7)	701 (30.4)	1043 (28.3)	

*Includes sometimes, fairly often and very often. †Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Statistically significantly more males than females disagreed with the first statement on vaping (26.3% vs. 15.4%, $p<.001$), while significantly more females than males disagreed with the second statement (86.7% vs. 78.9%, $p<.001$) and the third statement (64.7% vs. 55.0%, $p<.001$) (**Table 5.12**).

Table 5. 12. Disagreement with the three statements about vaping; by Gender

		Male	Female	Total	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour. (n=4313)	Disagree/strongly disagree	412 (26.3)	422 (15.4)	834 (19.3)	<.001
	Other*	1154 (73.7)	2325 (84.6)	3479 (80.7)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed. (n=4305)	Disagree/strongly disagree	1232 (78.9)	2378 (86.7)	3610 (83.9)	<.001
	Other*	329 (21.1)	366 (13.3)	695 (16.1)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed. (n=4305)	Disagree/strongly disagree	859 (55.0)	1774 (64.7)	2633 (61.2)	<.001
	Other*	702 (45.0)	970 (35.3)	1672 (38.8)	

***** Includes those who were neutral, agreed or strongly agreed.

5.3.4 E-cigarette use; by Smoking Status

Current smokers were significantly more likely to report ever vaping (65.6% vs. 16.4%, $p<.001$), current vaping (9.9% vs. 1.0%, $p<.001$), daily or almost daily vaping (3.6% vs. 0.4%, $p<.001$), vaping daily for a month or more (14.7% vs. 7.2%, $p<.001$), vaping to quit smoking (11.0% vs. 3.8%, $p<.001$), and using nicotine-containing devices (55.5% vs. 34.0%, $p<.001$), while non-smokers were significantly more likely to report vaping out of curiosity (76.7% vs. 56.9%, $p<.001$) (**Table 5.13**).

Table 5. 13. E-cigarette use behaviour, reasons for use and perceptions of harm; by smoking status

			Current smoker	Non-smoker*	Total	*P-value*
Use behaviour	Ever use (n=4949)	Yes	288 (65.6)	741 (16.4)	1029 (20.8)	<.001
		No	151 (34.4)	3769 (83.6)	3920 (79.2)	
	Current use (n=5172)	Yes	44 (9.9)	47 (1.0)	91 (1.8)	<.001
		No	401 (90.1)	4680 (99.0)	5081 (98.2)	
	Daily use (n=5172)	Yes	16 (3.6)	19 (0.4)	35 (0.7)	<.001
		No	429 (96.4)	4708 (99.6)	5137 (99.3)	
	Daily use for a month or more (n=1013)	Yes	41 (14.7)	53 (7.2)	94 (9.3)	<.001
		No	238 (85.3)	681 (92.8)	919 (90.7)	
	Use of nicotine (n=773)	Yes	122 (55.5)	188 (34.0)	310 (40.1)	<.001
		No	98 (44.5)	365 (66.0)	463 (59.9)	
	Use in indoor smokefree spaces (n=316)	No	111 (93.3)	178 (90.4)	289 (91.5)	.368
		Other†	8 (6.7)	19 (9.6)	27 (8.5)	
	Use in outdoor smokefree spaces (n=316)	No	104 (87.4)	163 (82.7)	267 (84.5)	.268
		Other†	15 (12.6)	34 (17.3)	49 (15.5)	
Reasons for use	To quit smoking (n=1021)	Yes	31 (11.0)	28 (3.8)	59 (5.8)	<.001
		No	252 (89.0)	710 (96.2)	962 (94.2)	
	For enjoyment (n=1021)	Yes	23 (8.1)	67 (9.1)	90 (8.8)	.631
		No	260 (91.9)	671 (90.9)	931 (91.2)	
	Curiosity/just wanted to try them (n=1021)	Yes	161 (56.9)	566 (76.7)	727 (71.2)	<.001
		No	122 (43.1)	172 (23.3)	294 (28.8)	
Perceptions of harm	Less harmful than cigarettes (n=3719)	Yes	249 (76.1)	2421 (71.4)	2670 (71.8)	.067
		Other§	78 (23.9)	971 (28.6)	1049 (28.2)	

*Includes never smokers and smokers who smoke less than once a month. †Includes sometimes, fairly often and very often. §Includes about same as cigarettes, somewhat more harmful than cigarettes, much more harmful than cigarettes and don't know.

Statistically significantly more current smokers disagreed with the first statement (55.2% vs. 16.0%, $p<.001$), while significantly more non-smokers disagreed with the second statement (85.2% vs. 68.1%, $p<.001$) and third statement (63.0% vs. 39.5%, $p<.001$) (**Table 5.14**).

Table 5. 14. Disagreement with the three statements about vaping; by Smoking status

		Current smoker?		Total	*P-value*
		Yes	No*		
If someone vapes around me they are causing me harm because of second-hand vapour. (n=4349)	Disagree/strongly disagree	211 (55.2)	635 (16.0)	846 (19.5)	<.001
	Other†	171 (44.8)	3332 (84.0)	3503 (80.5)	
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed. (n=4341)	Disagree/strongly disagree	260 (68.1)	3374 (85.2)	3634 (83.7)	<.001
	Other†	122 (31.9)	585 (14.8)	707 (16.3)	
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed. (n=4341)	Disagree/strongly disagree	151 (39.5)	2496 (63.0)	2647 (61.0)	<.001
	Other†	231 (60.5)	1463 (37.0)	1694 (39.0)	

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, agreed or strongly agreed.

5.4 Logistic Regression Analysis

A bivariate model was used to investigate the relationship of vaping with smoking while controlling for age and gender. The model with 4,830 cases included (342 missing cases) contained three independent variables (age, gender, and current smoking). The full model containing all predictors was statistically significant, χ^2 (3, N = 4,830) = 124.857, $p < .001$, indicating that the model was able to distinguish between respondents who did and who did not report current vaping.

As shown in **Table 5.15**, only two of the independent variables made a unique significant contribution to the model (gender and current smoking). The strongest predictor of reporting current vaping was current smoking, which had an odds ratio of 7.88 (95% CI 5.09-12.21) suggesting that current smokers were nearly 8 times as likely to be current vapers as non-smokers.

Table 5. 15. Logistic regression model predicting likelihood of being a current vaper.

	B	S.E.	p	Odds Ratio	95% CI for Odds Ratio	
					Lower	Upper
Age	.324	.229	.157	1.383	.882	2.169
Gender	1.295	.246	.000	3.650	2.254	5.910
Current smoker	2.065	.223	.000	7.884	5.092	12.205

Reference categories: age (<25 years), gender (female), and current smoking (non-smoker).

5.5 Key findings – Australian component

5.5.1 Tobacco Use

- Overall, 43.5% (95% CI = 42.1-44.8) of participants ever smoked, 8.6% (95% CI = 7.9-9.4) were current smokers, and 5.0% (95% CI = 4.4-5.6) smoked at least once daily. Of current smokers: 61.9% smoked 1-5 cigarettes/day, 68.1% smoked their first cigarette after more than 60 minutes of waking up, 98.3% never or almost never smoked in indoor and 83.5% in outdoor smokefree spaces, 61.3% planned to quit smoking at some point, and 13.3% had tried to quit smoking (78.4% made 1-3 serious attempts).
- The majority of respondents agreed with three statements about potentially new long-term tobacco control measures for Australia: 92.2% agreed with "I prefer to be in a smokefree environment", 82.1% agreed with "The number of places allowed to sell cigarettes and tobacco should be reduced", and 75.9% agreed with "Cigarettes and tobacco should not be sold in Australia in 10 years". Current smokers were statistically significantly less likely than non-smokers to agree with all statements: first (51.8% vs 96.1%, $p<.001$), second (29.1% vs 87.1%, $p<.001$), and third (23.4% vs 80.9%, $p<.001$).
- Participants aged ≥25 years were significantly more likely to report ever smoking (63.5% vs. 38.3%, $p<.001$), smoking at least daily (6.4% vs. 4.7%, $p=.020$), smoking more than 5 cigarettes/day (48.5% vs. 33.8%, $p=.003$) and smoking the first cigarette within 60 minutes of waking up (39.2% vs. 28.6%, $p=.042$).
- Males were significantly more likely to report ever smoking (54.6% vs. 39.6%, $p<.001$), current smoking (13.5% vs. 6.2%, $p<.001$), daily smoking (8.2% vs. 3.4%, $p<.001$), smoking more than 5 cigarettes/day (42.5% vs. 33.2%, $p=.040$) and trying to quit smoking (17.2% vs. 10.0%, $p<.001$) than females, while significantly more females than males reported never or almost never smoking in indoor smokefree spaces (100.0% vs. 96.9%, $p=.010$).

5.5.2 E-cigarette Use

- Overall, 19.9% (95% CI = 18.8-21.0) of participants had ever vaped, 1.8% (95% CI = 1.4-2.2) were current vapers, and 0.7% (95% CI = 0.5-0.9) vaped daily or almost daily. Of vapers, 91.5% never or almost never vaped in indoor smokefree spaces and 84.5% in outdoor smokefree spaces, 5.8% vaped to quit smoking, 8.8% vaped for enjoyment, 71.2%

vaped out of curiosity, and the remainder vaped for other reasons; 40.1% of those who had vaped daily for a month or more used nicotine-containing devices.

- Regardless of vaping status, 71.8% of respondents thought e-cigarettes were less harmful than tobacco cigarettes.
- Participants aged ≥25 years were significantly more likely than those aged <25 years to report vaping daily or almost daily (1.4% vs. 0.5%, p=.001), vaping daily for a month or more (18.0% vs. 6.4%, p<.001), vaping to quit smoking (12.7% vs. 3.4%, p<.001) and using nicotine-containing devices (58.4% vs. 34.1%, p<.001), while significantly participants aged <25 years than those aged ≥25 years reported never/almost never vaping in indoor (93.0% vs. 85.3%, p=.045) or outdoor (86.9% vs. 75.0%, p=017) smokefree spaces, vaped out of curiosity (74.2% vs. 63.1%, p=.001) and thought e-cigarettes were less harmful than tobacco cigarettes (75.1% vs. 63.9%, p<.001).
- Males were significantly more likely than females to report ever vaping (28.6% vs. 16.4%, p<.001), current (3.6% vs. 0.8%, p<.001), daily or almost daily use (1.5% vs. 0.2%, p<.001), daily use for a month or more (12.1% vs. 6.3%, p<.001), vaping to quit smoking (7.2% vs. 4.3%, p=.048) or for enjoyment (11.5% vs. 6.1%, p=.002), using nicotine-containing devices (47.0% vs. 33.0%, p<.001) and thought that e-cigarettes were less harmful than tobacco cigarettes (75.3% vs. 69.6%, p<.001), while significantly more females than males reported not vaping in indoor (95.2% vs. 88.9%, p=.051) and outdoor (90.4% vs. 80.4%, p=.017) smokefree spaces, and vaping out of curiosity (77.1% vs. 65.6%, p<.001).
- Current smokers were significantly more likely than non-smokers to report ever vaping (65.6% vs. 16.4%, p<.001), current vaping (9.9% vs. 1.0%, p<.001), daily or almost daily vaping (3.6% vs. 0.4%, p<.001), vaping daily for a month or more (14.7% vs. 7.2%, p<.001), vaping to quit to quit (11.0% vs. 3.8%, p<.001) and using nicotine-containing devices (55.5% vs. 34.0%, p<.001), while non-smokers were significantly more likely to report vaping out of curiosity (76.7% vs. 56.9%, p<.001).

5.5.3 Logistic Regression

Males were 3.65 times as likely as females (95% CI 2.25-5.91), and current smokers were 7.88 times as likely as non-smokers (95% CI 5.09-12.21) to be current vapers.

CHAPTER 6 – RESULTS (3)

This chapter compares the results of T1 and T2 surveys of the NZ component, highlighting any significant differences between the two data collection cycles, including demographic characteristics, tobacco use, vaping and the Smokefree 2025 goal.

6.1 Demographic characteristics

The demographic characteristics of participants in first survey and the separate participants in the second survey were similar (**Table 6.1**).

Table 6. 1. The demographic characteristics of participants in T1 and T2.

	T1 (%)	**T2 (%)**
Aged <25 years	82.5	81.5
Aged ≥25 years	17.5	18.5
Male	39.9	43.1
Female	60.1	56.9
Lived in New Zealand ≤5 years	25.9	22.9
Lived in New Zealand ≥6 years	74.1	77.1
Māori	7.9	7.9
Non-Māori	92.1	92.1
History of mental illness	16.1	18.1

6.2 Tobacco Use

6.2.1 Tobacco use; Overall

The overall patterns of smoking at T1 and T2 are presented in **Table 6.2.1.** The proportion of respondents who reported smoking 1-5 cigarettes/day increased at T2, as was that of respondents who did not smoke in smokefree spaces. Fewer respondents intended to quit smoking at T2 but more attempted to quit smoking at the same time.

Table 6.2. 1. The overall patterns of smoking at T1 and T2 surveys.

	T1 (%)	**T2 (%)**
Ever smoked	49.9	48.5
Currently smoke	10.4	11.3
Smoke at least daily	5.6	4.5
Smoked 1-5 cigarettes/day in the past 30 days	64.2	70.0
Smoked the first cigarette after more than 60 minutes of waking	69.7	67.1
Never/almost never smoked in indoor smokefree spaces	87.4	90.6
Never/almost never smoked in outdoor smokefree spaces	65.1	67.8
Intended to quit	68.7	61.1
Attempted to quit in the last 12 months	37.8	42.4
Made 1-3 serious quit attempts in the last 12 months	73.8	69.1

The proportion of respondents who would continue to smoke the same amount as they currently smoked in response to simulated increases in price of their regular cigarettes or RYO tobacco declined, while the proportion of respondents who would switch to vaping or quit smoking increased at all price levels, at T1 and T2 (**Table 6.2.2 and Figures 4.1.2 & 4.2.2**).

Table 6.2. 2. Change in smoking intentions of participants following simulated cigarette price increases, at T1 and T2.

	$5.00 (%)		**$10.00 (%)**		**$15.00 (%)**		**>$15.00 (%)**	
	T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
Smoke the same amount as today	53.7	58.3	23.8	30.2	17.0	19.5	16.6	16.4
Smoke less than today	32.2	20.5	40.3	25.5	18.4	15.3	14.4	11.3
Switch to other tobacco products	2.7	3.6	11.9	12.6	18.0	13.4	6.3	6.7
Switch to e-cigarettes	2.5	8.8	8.1	13.9	18.0	21.5	19.2	25.7
Stop smoking altogether	8.9	8.8	15.9	17.8	28.6	30.3	43.5	40.0
Total	**176**	**200**	**178**	**199**	**174**	**206**	**170**	**202**

The majority of respondents to both surveys agreed/strongly agreed with the three statements about potentially new smokefree policies for New Zealand (**Table 6.2.3**).

Table 6.2. 3. How participants agreed or disagreed with three statements on potentially new smokefree policies for New Zealand, at T1 and T2.

	Agree/strongly agree (%)		Other (%)	
	T1	**T2**	**T1**	**T2**
Being smokefree is part of the New Zealand way of life.	50.7	51.2	49.3	48.8
The number of places allowed to sell cigarettes and tobacco should be reduced.	68.7	68.3	31.3	31.7
Cigarettes should no longer be sold in New Zealand in 10 years.	53.0	55.0	47.0	45.0

Current smokers were significantly less likely than non-smokers to agree with the three statements about potentially new smokefree policies for New Zealand (**Table 6.2.4**).

Table 6.2. 4. Agreement ("agree/strongly agree") with three statements on potentially new smokefree policies for New Zealand, by smoking status, at T1 and T2.

		Current smoker (%)	Non-smoker* (%)	Total (%)	*P-value*
Being Smokefree is part of the New Zealand way of life.	T1	18.5	54.2	50.6	<.001
	T2	23.7	54.6	51.1	<.001
The number of places allowed to sell cigarettes and tobacco should be reduced.	T1	25.7	73.6	68.7	<.001
	T2	30.7	73.1	68.4	<.001
Cigarettes should not be sold in New Zealand in 10 years.	T1	21.3	56.6	53.0	<.001
	T2	21.4	59.3	55.0	<.001

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly. †Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

6.2.2 Tobacco use; by Age

The patterns of smoking, by age group, at T1 and T2 are presented in **Table 6.2.5**. Statistically significantly more participants aged ≥25 years ever smoked (both surveys) and tried to quit smoking compared to participants aged <25 years at T1, while more participants aged ≥25 years smoked daily, planned to quit smoking and had made 1-3 serious attempts to quit smoking compared with participants aged <25 years at T2.

Table 6.2. 5. The patterns of smoking of participants, by age group, at T1 and T2.

		<25 years (%)	≥25 years (%)	Total (%)	*P-value*
Ever smoked	T1	48.8	55.0	50.0	.040
	T2	47.1	55.0	48.6	.007
Currently smoke	T1	11.0	7.6	10.4	.069
	T2	11.0	12.8	11.3	.325
Smoke at least daily	T1	5.7	5.0	5.6	.619
	T2	3.8	7.8	4.5	.001
Smoked 1-5 cigarettes/day in the past 30 days	T1	64.7	64.0	64.6	.945
	T2	73.0	59.2	70.2	.059
Smoked the first cigarette after 60 minutes of waking	T1	74.2	42.9	69.9	.001
	T2	70.4	54.0	67.1	.028
Never/almost never smoked in indoor smokefree spaces	T1	86.2	93.3	87.2	.280
	T2	89.1	96.2	90.5	.119
Never/almost never smoked in outdoor smokefree spaces	T1	63.7	75.9	65.3	.199
	T2	66.0	74.5	67.7	.246
Planned to quit	T1	70.1	58.6	68.5	.216
	T2	57.7	74.5	61.1	.028
Attempted to quit in the last 12 months	T1	33.3	65.5	37.6	.001
	T2	39.8	52.9	42.5	.090
Made 1-3 serious quit attempts in the last 12 months	T1	72.4	77.8	73.7	.652
	T2	62.8	85.2	68.6	.031

6.2.3 Tobacco use; by Gender

The patterns of smoking, by gender, at T1 and T2 are presented in **Table 6.2.6**. Significantly more males than females reported ever smoking, current smoking, and daily smoking at both surveys. At T2, significantly more females than males reported not smoking in outdoor smokefree spaces and having tried to quit smoking.

Table 6.2. 6. The patterns of smoking of participants, by gender, at T1 and T2.

		Male (%)	Female (%)	Total (%)	*P-value*
Ever smoked	T1	59.0	43.5	50.0	<.001
	T2	56.3	42.9	48.6	<.001
Currently smoke	T1	15.8	6.6	10.4	<.001
	T2	16.4	7.5	11.3	<.001
Smoke at least daily	T1	8.9	3.1	5.6	<.001
	T2	7.0	2.7	4.5	<.001
Smoked 1-5 cigarettes/day in the past 30 days	T1	60.8	69.3	64.1	.229
	T2	67.1	74.5	70.2	.223
Smoked the first cigarette after 60 minutes of waking	T1	67.7	72.7	69.6	.447
	T2	64.8	70.2	67.1	.374
Never/almost never smoked in indoor smokefree spaces	T1	85.7	89.7	87.3	.391
	T2	88.3	94.4	90.9	.096
Never/almost never smoked in outdoor smokefree spaces	T1	60.9	71.8	65.1	.101
	T2	62.5	75.5	68.0	.030
Planned to quit	T1	66.7	72.5	68.8	.372
	T2	57.2	66.4	61.1	.142
Attempted to quit in the last 12 months	T1	35.6	41.4	37.9	.389
	T2	35.6	51.4	42.3	.012
Made 1-3 serious quit attempts in the last 12 months	T1	66.7	86.2	74.0	.058
	T2	66.7	70.4	68.6	.683

6.2.4 Tobacco use; by Ethnicity

The patterns of smoking, by ethnicity, at T1 and T2 are presented in **Table 6.2.7**. Significantly more Māori than non-Māori reported ever smoking at both surveys, and current smoking at T2.

Table 6.2. 7. The patterns of smoking of participants, by ethnicity, at T1 and T2.

		Māori (%)	Non-Māori (%)	Total (%)	*P-value*
Ever smoked	T1	71.0	48.3	50.0	<.001
	T2	62.3	47.3	48.5	<.001
Currently smoke	T1	12.4	10.3	10.4	.427
	T2	18.8	10.6	11.3	.002
Smoke at least daily	T1	6.5	5.5	5.6	.607
	T2	6.5	4.3	4.5	.214
Smoked 1-5 cigarettes/day in the past 30 days	T1	61.1	64.4	64.1	.781
	T2	62.1	71.3	70.2	.309
Smoked the first cigarette after 60 minutes of waking	T1	55.0	71.3	69.7	.132
	T2	74.2	65.9	66.9	.358
Never/almost never smoked in indoor smokefree spaces	T1	95.2	86.4	87.2	.247
	T2	84.8	91.4	90.5	.234
Never/almost never smoked in outdoor smokefree spaces	T1	52.4	66.7	65.3	.191
	T2	69.7	67.4	67.7	.795
Planned to quit	T1	75.0	68.0	68.7	.523
	T2	47.1	63.3	61.1	.071
Attempted to quit in the last 12 months	T1	47.6	36.9	37.9	.334
	T2	35.3	43.6	42.5	.360
Made 1-3 serious quit attempts in the last 12 months	T1	90.0	70.6	73.1	.196
	T2	66.7	69.1	68.9	.861

6.3 E-cigarette Use

6.3.1 E-cigarette use; Overall

The overall patterns of e-cigarette use at T1 and T2 are presented in **Table 6.3.1.** The prevalence of ever, current and daily use, and use for enjoyment, increased at T2 while non-use in smokefree spaces and perceptions that e-cigarettes were less harmful than traditional cigarettes declined at T2 compared with T1.

Table 6.3. 1. The overall patterns of e-cigarette use at T1 and T2 surveys.

	T1 (%)	T2 (%)
Ever vaped	37.0	45.6
Currently vaped	6.5	12.6
Vaped daily or almost daily	2.5	5.1
Vaped daily for a month or more	15.8	17.6
Used nicotine-containing e-cigarettes	80.3	80.3
Never/almost never vaped in indoor smokefree spaces	79.6	70.0
Never/almost never vaped in outdoor smokefree spaces	71.3	63.0
Vaped to quit smoking	6.2	5.7
Vaped for enjoyment	13.4	16.3
Vaped out of curiosity/just wanted to try them	63.7	63.8
Perceived e-cigarettes to be less harmful than cigarettes	75.3	71.7

Concerning the three statements about vaping, about a third of respondents disagreed with the first statement (vaping round me causes me harm), about two thirds of respondents disagreed with the second statement (allow vaping in indoor smokefree spaces) and about half of respondents disagreed with the third statement (allow vaping in outdoor smokefree spaces) (**Table 6.3.2**).

Table 6.3. 2. Thoughts of participants on three statements about e-cigarette use, at T1 and T2.

	Disagree/strongly disagree (%)		Other* (%)	
	T1	T2	T1	T2
If someone vapes around me they are causing me harm because of second-hand vapour	30.6	33.4	69.4	66.6
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed	74.2	73.1	25.8	26.9
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed	54.5	53.0	45.5	47.0

*Includes those who were neutral, disagreed, strongly disagreed or had no opinion.

6.3.2 E-cigarette use; by Age

Table 6.3.3 presents e-cigarette use behaviour, reasons for use and perceptions of harm, by age group, at T1 and T2. Significantly more participants aged <25 years than those aged ≥25 years reported ever vaping and vaping out of curiosity, while more participants aged ≥25 years than those aged <25 years reported vaping daily for ≥1 month and to quit smoking.

Table 6.3. 3. E-cigarette use behaviour, reasons for use and perceptions of harm, by age group, at T1 and T2.

			<25 years (%)	≥25 years (%)	Total (%)	*P-value*
	Ever use	T1	39.8	27.8	37.6	<.001
		T2	49.1	30.3	45.6	<.001
	Current use	T1	5.9	8.5	6.4	.079
		T2	14.0	6.4	12.6	<.001
	Daily use	T1	1.6	6.8	2.5	<.001
		T2	5.5	3.6	5.1	.145
	Daily use for a month or more	T1	11.4	41.3	15.8	<.001
		T2	16.0	28.4	17.6	.001
	Use of nicotine	T1	70.2	96.6	80.3	.005
		T2	80.5	79.3	80.3	.885
	Did not use in indoor smokefree spaces	T1	80.1	76.5	79.6	.550
		T2	69.5	72.7	69.8	.660
	Did not use in outdoor smokefree spaces	T1	73.2	62.7	71.6	.128
		T2	62.6	64.4	62.8	.813
Reasons for use	To quit smoking	T1	2.4	29.2	6.2	<.001
		T2	3.9	18.4	5.7	<.001
	For enjoyment	T1	14.8	4.2	13.3	.014
		T2	16.9	11.7	16.3	.173
	Curiosity/just wanted to try them	T1	67.3	43.1	63.8	<.001
		T2	65.3	52.4	63.8	.011
Perception of harmfulness of e-cigarettes	That e-cigarettes are less harmful than cigarettes	T1	76.4	70.4	75.3	.055
		T2	72.9	64.6	71.7	.013

Participants aged <25 years were more likely than those aged ≥25 years to disagree with the first statement about vaping (vaping around me causes me harm) at both surveys (**Table 6.3.4**).

Table 6.3. 4. Disagreement (disagree/strongly disagree) with three statements about vaping, by age group, at T1 and T2.

		<25 years (%)	≥25 years (%)	Total (%)	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour.	T1	32.6	21.6	30.6	<.001
	T2	35.9	22.5	33.4	<.001
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.	T1	74.4	73.6	74.2	.763
	T2	73.0	73.5	73.1	.827
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.	T1	54.3	55.6	54.6	.670
	T2	51.5	59.2	52.9	.009

6.3.3 E-cigarette use; by Gender

Table 6.3.5 presents e-cigarette use behaviour, reasons for use and perceptions of harm, by gender, at T1 and T2. Males were significantly more likely than females (at both surveys) to report ever, current and daily use, daily use for a month or more and belief that e-cigarettes were less harmful than tobacco cigarettes.

Table 6.3. 5. E-cigarette use behaviour, reasons for use and perceptions of harm, by gender, at T1 and T2.

			Male (%)	**Female (%)**	**Total (%)**	***P-value***
	Ever use	T1	47.6	30.5	37.6	<.001
		T2	52.7	40.3	45.6	<.001
	Current use	T1	9.0	4.5	6.4	<.001
		T2	18.4	8.3	12.6	<.001
	Daily use	T1	4.1	1.3	2.5	<.001
		T2	7.9	3.0	5.1	<.001
	Daily use for a month or more	T1	19.7	10.9	15.6	.006
		T2	23.3	11.9	17.5	<.001
	Use of nicotine	T1	84.6	70.8	80.3	.161
		T2	82.5	76.5	80.4	.382
	Did not use in indoor smokefree spaces	T1	78.7	80.7	79.6	.651
		T2	67.7	72.9	70.0	.229
	Did not use in outdoor smokefree spaces	T1	72.0	70.3	71.3	.745
		T2	59.4	67.4	63.1	.074
Reasons for use	To quit smoking	T1	7.1	5.2	6.2	.401
		T2	5.8	5.5	5.7	.853
	For enjoyment	T1	14.6	12.2	13.5	.438
		T2	18.9	13.8	16.3	.041
	Curiosity/just wanted to try them	T1	61.2	66.8	63.8	.194
		T2	56.6	70.6	63.8	<.001
Perceptions of harmfulness of e-cigarettes	That e-cigarettes are less harmful than cigarettes	T1	79.6	72.2	75.3	.002
		T2	77.0	67.8	71.7	<.001

Males were significantly more likely to disagree with the first statement about vaping (vaping around me causes me harm), but less likely to disagree with the second (allow vaping in indoor smokefree spaces) and third (allow vaping in outdoor smokefree spaces) statements (**Table 6.3.6**).

Table 6.3. 6. Disagreement ("disagree/strongly disagree") with three statements about vaping, by gender, at T1 and T2.

		Male (%)	Female (%)	Total (%)	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour.	T1	34.4	27.8	30.6	.003
	T2	42.1	26.9	33.4	<.001
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.	T1	70.0	77.2	74.2	.001
	T2	69.7	75.6	73.1	.004
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.	T1	49.1	58.4	54.5	<.001
	T2	48.4	56.3	53.0	.001

6.3.4 E-cigarette use; by Ethnicity

Table 6.3.7 presents e-cigarette use behaviour, reasons for use and perceptions of harm, by ethnicity, at T1 and T2. Māori were significantly more likely than non-Māori to report ever vaping at both surveys.

Table 6.3. 7. E-cigarette use behaviour, reasons for use and perceptions of harm, by ethnicity, at T1 and T2.

			Māori (%)	Non-Māori (%)	Total (%)	*P-value*
	Ever use	T1	51.9	36.5	37.6	<.001
		T2	54.6	44.8	45.6	.020
	Current use	T1	9.4	6.2	6.5	.143
		T2	14.9	12.4	12.6	.356
	Daily use	T1	5.8	2.3	2.5	.011
		T2	7.8	4.9	5.1	.117
	Daily use for a month or more	T1	18.0	15.5	15.8	.647
		T2	20.5	17.2	17.5	.451
	Use of nicotine	T1	88.9	79.1	80.3	.489
		T2	81.3	80.2	80.3	.917
	Did not use in indoor smokefree spaces	T1	78.0	79.8	79.6	.796
		T2	66.7	70.3	70.0	.612
	Did not use in outdoor smokefree spaces	T1	70.0	71.5	71.3	.841
		T2	55.6	63.8	63.0	.278
Reasons for use	To quit smoking	T1	12.5	5.6	6.2	.058
		T2	6.3	5.7	5.8	.849
	For enjoyment	T1	16.7	13.1	13.5	.493
		T2	10.0	16.9	16.3	.110
	Curiosity/just wanted to try them	T1	60.4	64.0	63.7	.624
		T2	59.3	64.3	63.8	.367
Perceptions of harmfulness of e-cigarettes	That e-cigarettes are less harmful than cigarettes	T1	77.2	75.2	75.3	.644
		T2	74.1	71.5	71.7	.566

In both surveys, Māori were significantly more likely than non-Māori to disagree with the first statement (vaping around me causes me harm) (**Table 6.3.8**).

Table 6.3. 8. Disagreement ("disagree/strongly disagree") with three statements about vaping, by ethnicity, at T1 and T2.

		Māori (%)	Non-Māori (%)	Total (%)	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour.	**T1**	54.8	28.6	30.6	<.001
	T2	42.1	32.6	33.4	.017
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.	**T1**	66.9	74.8	74.2	.047
	T2	71.1	73.3	73.1	.553
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.	**T1**	46.6	55.1	54.5	.058
	T2	47.4	53.4	52.9	.151

6.3.5 E-cigarette use; by Smoking Status

Table 6.3.9 presents e-cigarette use behaviour, reasons for use and perceptions of harm, by smoking status, at T1 and T2. Respondents who smoked were significantly more likely than respondents who did not smoke to report ever, current and daily use, and daily use for a month or more, while respondents who did not smoke were more likely to report not vaping in smokefree spaces.

Table 6.3. 9. E-cigarette use behaviour, reasons for use and perceptions of harm, by smoking status, at T1 and T2.

			Current smoker (%)	**Non-smoker* (%)**	**Total (%)**	***P-value***
	Ever use	T1	72.3	33.7	37.6	<.001
		T2	85.7	40.5	45.6	<.001
	Current use	T1	17.1	5.2	6.5	<.001
		T2	44.5	8.5	12.6	<.001
	Daily use	T1	7.8	1.9	2.5	<.001
		T2	21.6	3.0	5.1	<.001
	Daily use for a month or more	T1	25.9	12.9	15.8	.001
		T2	36.2	12.5	17.6	<.001
	Use of nicotine	T1	92.3	74.0	80.3	.057
		T2	93.9	69.1	80.3	<.001
	Did not use in indoor smokefree spaces	T1	69.5	83.0	79.6	.009
		T2	55.9	76.5	70.0	<.001
	Did not use in outdoor smokefree spaces	T1	59.3	75.4	71.3	.005
		T2	50.7	68.4	62.9	<.001
Reasons for use	To quit smoking	T1	9.3	5.4	6.2	.132
		T2	17.7	2.5	5.8	<.001
	For enjoyment	T1	13.1	13.6	13.5	.899
		T2	16.7	16.2	16.3	.872
	Curiosity/just wanted to try them	T1	47.7	68.0	63.7	<.001
		T2	35.9	71.4	63.8	<.001
Perceptions of harmfulness of e-cigarettes	That e-cigarettes are less harmful than cigarettes	T1	73.5	75.6	75.3	.601
		T2	71.6	71.8	71.7	.966

Respondents who smoked were significantly more likely than respondents who did not smoke to disagree with the first statement (vaping around me causes me harm), but not the second (allow vaping in indoor smokefree spaces) or the third statement (allow vaping in outdoor smokefree spaces) (**Table 6.3.10**).

Table 6.3. 10. Disagreement ("disagree/strongly disagree") with three statements about vaping, by smoking status, at T1 and T2.

		Current smoker (%)	Non-smoker* (%)	Total (%)	*P-value*
If someone vapes around me they are causing me harm because of second-hand vapour.	T1	55.7	27.8	30.6	<.001
	T2	57.4	30.3	33.4	<.001
People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.	T1	53.0	76.5	74.2	<.001
	T2	53.7	75.6	73.1	<.001
People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.	T1	35.0	56.7	54.5	<.001
	T2	38.3	54.8	53.0	<.001

6.4 The Smokefree 2025 goal

6.4.1 Smokefree 2025; Overall

The awareness of, and belief that the Smokefree goal can be achieved increased slightly at T2, support for, and belief that vaping can help to achieve it were similar at both surveys (**Table 6.4.1**).

Table 6.4. 1. The overall awareness of, support for, and perceptions of participants on the Smokefree 2025 goal at T1 and T2 surveys.

	T1 (%)	T2 (%)
Was aware of the smokefree goal before survey day	43.3	47.2
Supported the smokefree goal	95.5	96.3
Believed the smokefree goal can be achieved	87.3	90.2
Believed e-cigarettes can help to achieve the smokefree goal	85.4	84.0

6.4.2 Smokefree 2025; by Age

The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by age group, at T1 and T2 surveys are presented in **Table 6.4.2**.

Table 6.4. 2. The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by age group, at T1 and T2 surveys.

		<25 years (%)	≥25 years (%)	Total (%)	*P-value*
Was aware of the smokefree goal before survey day	T1	45.5	40.5	44.6	.096
	T2	49.5	37.2	47.2	<.001
Supported the smokefree goal	T1	95.9	94.0	95.6	.149
	T2	96.1	97.6	96.4	.199
Believed the smokefree goal can be achieved	T1	87.5	87.1	87.4	.849
	T2	89.3	94.1	90.2	.017
Believed e-cigarettes can help to achieve the smokefree goal	T1	86.9	78.3	85.4	.001

6.4.3 Smokefree 2025; by Gender

The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by gender, at T1 and T2 surveys are presented in **Table 6.4.3**.

Table 6.4. 3. The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by gender, at T1 and T2 surveys.

		Male (%)	Female (%)	Total (%)	*P-value*
Was aware of the smokefree goal before survey day	T1	47.1	42.8	44.6	.074
	T2	49.4	45.6	47.2	.098
Supported the smokefree goal	T1	94.9	95.9	95.5	.298
	T2	93.9	98.1	96.3	<.001
Believed the smokefree goal can be achieved	T1	84.6	89.3	87.3	.012
	T2	83.7	94.8	90.2	<.001
Believed e-cigarettes can help to achieve the smokefree goal	T1	83.1	87.1	85.4	.037
	T2	83.4	84.5	84.0	.563

6.4.4 Smokefree 2025; by Ethnicity

The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by ethnicity, at T1 and T2 surveys are presented in **Table 6.4.4**. Māori were significantly more likely than non-Māori to be aware of the Smokefree goal, but less likely to support it.

Table 6.4. 4. The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by ethnicity, at T1 and T2 surveys.

		Māori (%)	Non-Māori (%)	Total (%)	*P-value*
Was aware of the smokefree goal before survey day	T1	57.7	43.6	44.6	.002
	T2	60.0	46.1	47.2	.001
Supported the smokefree goal	T1	91.2	95.8	95.5	.023
	T2	92.9	96.6	96.3	.022
Believed the smokefree goal can be achieved	T1	83.9	87.6	87.3	.319
	T2	84.2	90.8	90.3	.023
Believed e-cigarettes can help to achieve the smokefree goal	T1	84.8	85.4	85.4	.871
	T2	87.1	83.7	84.0	.345

6.4.5 Smokefree 2025; by Smoking Status

The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by smoking status, at T1 and T2 surveys are presented in **Table 6.4.5**. Respondents who smoked were significantly more likely than respondents who did not smoke to be aware of the Smokefree goal, but less likely to support it or to believe it can be achieved.

Table 6.4. 5. The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by smoking status, at T1 and T2 surveys.

		Current smoker (%)	Non-smoker* (%)	Total (%)	*P-value*
Was aware of the smokefree goal before survey day	T1	56.6	43.2	44.6	.001
	T2	64.5	45.0	47.2	<.001
Supported the smokefree goal	T1	81.3	96.6	95.5	<.001
	T2	79.7	98.0	96.3	<.001
Believed the smokefree goal can be achieved	T1	58.1	90.4	87.3	<.001
	T2	69.8	92.5	90.2	<.001
Believed e-cigarettes can help to achieve the smokefree goal	T1	77.1	86.2	85.3	.005
	T2	86.8	83.7	84.0	.316

*Includes never-smokers as well as ex-smokers and people who smoked less than once monthly.

6.4.6 Smokefree 2025; by E-cigarette Use

The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by vaping status, at T1 and T2 surveys are presented in **Table 6.4.6**. Respondents who vaped were significantly more likely than respondents who did not vape to be aware of the Smokefree goal

and to believe that vaping can help to achieve the goal, but less likely to support it or to believe it can be achieved.

Table 6.4. 6. The awareness of, support for, and perceptions of participants on the Smokefree 2025 goal, by vaping status, at T1 and T2 surveys.

		Current vaper (%)	Non-vaper* (%)	Total (%)	*P-value*
Was aware of the smokefree goal before survey day	T1	66.7	43.1	44.6	<.001
	T2	60.3	45.3	47.2	<.001
Supported the smokefree goal	T1	90.7	95.9	95.6	.017
	T2	91.3	97.0	96.4	<.001
Believed the smokefree goal can be achieved	T1	77.0	88.0	87.3	.006
	T2	80.7	91.5	90.3	<.001
Believed e-cigarettes can help to achieve the smokefree goal	T1	96.5	84.3	85.4	<.001
	T2	95.7	82.1	84.0	<.001

*Includes never-vapers as well as people who vaped less than once monthly.

6.5 Logistic Regression Analyses

- Vaping and smoking: males were 1.8-2.2 times as likely as females (OR: T1 1.80 vs T2 2.18) and current smokers were 3.2-8.3 times as likely as non-smokers (OR: T1 3.23 vs T2 8.25) to report current vaping. Furthermore at T2, participants aged <25 years were 3.07 times as likely as participants aged ≥25 years to report current vaping.

- HMI and smoking and vaping: females were 1.6-2.2 times as likely as males (OR: T1 1.58 vs T2 2.23); current smokers were 1.7-1.9 times as likely as non-smokers (OR: T1 1.67 vs T2 1.87), and current vapers were 1.7-1.9 times as likely as non-vapers (OR: T1 1.73-1.89), to report an HMI. Moreover at T2, Māori were 1.78 times as likely as non-Māori to report an HMI.

- The Smokefree goal, smoking, and vaping:
    - Awareness: Māori were 1.6-1.7 times as likely as non-Māori (OR: T1 1.72 vs T2 1.63), current smokers were 1.5-2.0 times as likely as non-smokers (OR: T1 1.48 vs T2 1.96), and current vapers were 1.4-2.4 times as likely as non-vapers (OR: T1 2.44 vs T2 1.37), to be aware of the Smokefree goal. Furthermore at T2, participants aged <25 years were 1.67 times as likely as participants aged ≥25 years to be aware of the Smokefree goal.

- Support: non-smokers were 6.6-11.2 times as likely as current smokers to support the Smokefree goal (OR: T1 6.58 vs T2 11.24). At T2, females were 2.55 times as likely as males to support the Smokefree goal.

- Belief that the goal can be achieved: non-smokers were 4.4-6.2 times as likely as current smokers to believe that the Smokefree goal can be achieved (OR: T1 6.17 vs T2 4.42). At T2, participants aged ≥25 years were 2.31 times as likely as participants aged <25 years to believe that the goal can be achieved.

- Belief that e-cigarettes/vaping can help to achieve the Smokefree goal: participants aged <25 years were 2.0 times as likely as participants aged ≥25 years (OR: T1 1.97 vs T2 2.01), and current vapers were 4.9-7.0 times as likely as non-vapers (OR: T1 7.00 vs T2 4.90) to believe that e-cigarettes/vaping can help to achieve the Smokefree goal. At T1, non-smokers were 2.23 times as likely as current smokers to believe that e-cigarettes/vaping can help to achieve the Smokefree goal.

CHAPTER 7 – DISCUSSION

"Universities represent important settings for the implementation of public health initiatives such as smokefree policies."[1]

As potential policy makers, professionals and senior managers of the future, the health-related lifestyles, as well as the attitudes and beliefs about health of university students, are likely to have a disproportionate influence on the health of the wider population.[2] Many students leave home for the first time to study and in the process create a lifestyle free from parental influence.[2 3] During this transition period, students are exposed to a wide range of social, emotional, and educational challenges[4] and experience fundamental changes in social contexts and identity. This new or increased independence and recently developed friendships can predispose students to experiment with newly discovered situations and products or take up habits including cigarette smoking and vaping, that may be difficult to change later in life.[2] For this reason universities play crucial roles both in the formation of important health-related habits (e.g. smoking initiation/uptake)[5] and in the control of such habits in the population. However, as noted in **Sections 1.1, 1.2, 2.2 and 2.3** of this thesis, data on smoking and vaping among university students in New Zealand and Australia are generally lacking despite smoking accounting for the greatest proportion of preventable death and morbidity in both countries.

The main objectives of this thesis were to estimate the prevalence and patterns of smoking and vaping, and awareness of, support for, and perceptions about the New Zealand Smokefree 2025 goal, among university students in New Zealand, in the presence of two distinctly different policies on vaping (i.e. stricter restrictions at T1 but not at T2) (**Sections 1.2 and 2.3**). This was achieved by conducting two cross-sectional surveys, twelve months apart, across all eight universities in New Zealand. In addition, data were collected from a large Australian university at one time point and compared with data collected at T1 in New Zealand. It was important to estimate smoking prevalence in university students to help assess and monitor any potential impact of vaping on smoking in this population group, given that a growing body of literature suggests an association between smoking and vaping.[6-16]

Although the original plan was to collect data at two time points in Australia, as in New Zealand, this did not eventuate. The second Australian survey had been scheduled to take place between September and December 2019, but a series of major bushfires in Queensland (and across Australia) between June 2019 and February 2020,[17] the Summer holidays (December 2019 to February 2020), and later the Covid-19 pandemic,[18] which caused severe disruptions to movements of people in Australia and globally, made it extremely difficult for collaborating researchers at UQ to roll out the second survey. Nonetheless, the UQ baseline data allowed for a comparison of prevalence estimates of smoking and vaping between an Australian and a New Zealand university student sample.

At the time of the initial data collection (UQ survey and New Zealand T1 survey), policies on vaping (specifically nicotine-containing devices) were similar in Australia and New Zealand: it was illegal to sell e-cigarettes containing nicotine in either country[19 20] but people could import up to three months' supply of these products for personal use. This policy changed in New Zealand on 27 March 2018 following a District Court ruling in *Philip Morris v Ministry of Health*, which allowed the importation, distribution and sale of all tobacco products, including vaping products containing nicotine, under the Smoke-free Environments Act 1990 (SFEA).[21] Throughout this project, smokefree regulations remained relatively similar in the two countries,[22 23] with the exception of e-cigarettes containing nicotine,[21] although Australia had substantially higher infringement fines for persons breaching these restrictions than did New Zealand.[22 24]

7.1 Cigarette smoking – New Zealand university students

Nearly half of participants had ever smoked (T1 49.9% vs T2 48.5%), 11% currently smoked (T1 10.4% vs T2 11.3%), and 5% smoked at least daily (T1 5.6% vs T2 4.5%) (**Sections 4.1.2.1 and 4.2.2.1**). The majority of participants, however, smoked five cigarettes or fewer per day (T1 64.2% vs T2 70.0%), smoked their first cigarette >60 minutes after waking up (T1 69.7% vs T2 67.1%), did not smoke in smokefree spaces (indoors T1 87.4% vs T2 90.6%, outdoors T1 65.1% vs T2 67.8%), planned to quit smoking (T1 68.7% vs T2 61.1%), about a third of smokers had tried to quit smoking (T1 37.8% vs T2 42.4%), and over two thirds of those who tried to quit had made 1-3 serious quit smoking attempts (T1 73.8% vs T2 69.1%). These results do not provide a clear indication of the potential impact of policy change on nicotine-containing vaping products on cigarette smoking. Access to nicotine-containing vaping products was more

relaxed at T2[19] than T1.[21] It may be that the T2 survey occurred too soon, at only 12 months, after the policy change or there was no clear communication or advice from the MOH and/or related agencies on how vaping could help reduce smoking.

At both time points, males were significantly more likely than females to report ever, current, and daily smoking, and older respondents (≥25 years) were significantly more likely than younger respondents (<25 years) to report smoking the first cigarette within 60 minutes of waking, and planning to quit smoking. Māori were significantly more likely to report ever smoking than non-Māori (**Sections 4.1.2.4 and 4.2.2.4**).

In addition, in response to simulated cigarette price increases per packet of respondents' regular cigarettes/RYO tobacco of $5.00, $10.00, $15.00 and >$15.00 at both time points the proportion of respondents who indicated that they would smoke the same amount as they currently smoked declined, while the proportion of respondents who indicated intentions to switch to e-cigarettes, or quit smoking increased at all price levels.

Furthermore, the majority of respondents agreed or strongly agreed (agreed) with three statements on potentially new long-term tobacco control measures for New Zealand. T1 50.7% and T2 51.2% agreed that "Being smokefree is part of the New Zealand way of life", T1 68.7% and T2 68.3% agreed that "The number of places allowed to sell cigarettes and tobacco should be reduced", and T1 53.0% and T2 55.0% agreed that "Cigarettes should no longer be sold in New Zealand in 10 years". In both surveys, non-smokers were significantly more likely than current smokers to agree with all three statements (**Sections 4.1.2.1 and 4.2.2.1**).

7.1.1 Findings of the literature review

The background literature review (**Section 2.2**) indicated that the smoking prevalence of university students in New Zealand was generally lower than that of similar-aged people in the general population. At a national level, data from the NZHS (2018/19) show that 14.2% of adults aged 15 years or older were current smokers.[25] Furthermore, substantial declines in smoking have occurred over the last decade, with current smoking declining from 20.1% in 2006/07 to 14.2% in 2018/19 and daily smoking declining from 18.3% to 12.5% in the same period. Current smoking still remains high in people aged 18-24 years (19.2%), 35-44 years (19.8%), Pasifika peoples (24.4%), and Māori (34.0%).[25] Data on smoking among tertiary

students in New Zealand were too few and far between to allow assessment of trends in smoking prevalence. This lack of literature was one of the main reasons for focusing on university students for this research project.

The link between smoking and educational attainment is well established; the prevalence of smoking tends to decline with increasing levels of education. A paper that analysed a section of T1 data on patterns of smoking reported that 11.1% of students aged 18-24 years were current smokers.[26] This estimate was substantially lower than that of individuals aged 18-24 in the general population.[27] Two previous studies similarly reported lower smoking prevalence estimates among university students in comparison with similar age groups in the general population. Marsh and colleagues (using 2013 data from a sample of students aged 17-25 from five universities) reported that 14% smoked occasionally and 3% smoked daily[28] compared with current smoking prevalence of 26% in the general population.[29] Similarly, an earlier survey using 2002 data from a sample of University of Otago students found that 10% of respondents smoked daily and a further 10% smoked occasionally,[30] compared with current smoking prevalence estimates of between 18.8-26.8% in ages 15-19 years and 29.8-30.3% in ages 20-24 years in the general population at the time.[31]

Likewise, the current estimate of the prevalence of smoking reported in this thesis is lower than the prevalence reported in the general population: 10.4% compared with 14.9% in 2018 and 11.3% compared with 14.2 in 2019.[25] Among ages 18-24, estimates of the current prevalence of smoking were 11.1% (2018) and 11.3% (2019) compared with 19.2% (2018/19) in the general population.[25]

A potentially crucial finding of this thesis is that significant numbers of smokers in both samples stated that they would reduce their smoking through switching to e-cigarettes and/or quitting in response to cigarette price increases. This finding was observerd in younger[32] and older participants alike, and is consistent with previous studies that regarded high cigarette/tobacco prices as the most effective intervention to control tobacco use.[33-39] However, only one of these studies was conducted in New Zealand, and it included vaping in the assessments.[33]

Support for the long-term reduction of tobacco availability was assessed using validated questions/statements (i.e. being smokefree is New Zealand way of life, the number of places

allowed to sell cigarettes/tobacco be reduced, and cigarettes should not be sold in New Zealand in 10 years).[40-44] However, none of the statements had been used in a tertiary education sample, either university or polytech. In 2010, the Health and Lifestyle Survey (which is abbreviated by some to HLS) asked a representative sample of New Zealand adults "Is being smokefree part of the New Zealand way of life?" and found that 51% of respondents agreed/strongly agreed, with more never smokers than current or ex-smokers agreeing.[44] This result is consisted with the results of this thesis where 50.7-51.2% of the sample agreed, with significantly more non-smokers than current smokers agreeing (T1 54.2% vs 18.5%, $p<.001$, T2 54.6% vs 23.7%, $p<.001$).

Another report using the HLS 2008-2010 data showed that 67% of respondents agreed/strongly agreed with the statement, "The number of retail outlets that sell tobacco products should be reduced to make them less available."[43] This finding is similar to findings of this thesis where 68.7% (T1) and 68.3% (T2) of respondents agreed or strongly agreed with a similar statement, "The number of places allowed to sell cigarettes and tobacco should be reduced." Consistent with the HLS,[43] non-smokers were significantly more likely than current smokers to agree with the statement.

The HLS 2010 data also showed that 43% of respondents agreed/strongly agreed with the statement, "Cigarettes and tobacco should not be sold in New Zealand in 10 years time"[44] compared with 53.0% (T1) and 55.0% (T2) in this thesis. The findings of this thesis were consistent with the HLS results, with non-smokers more likely than current or ex-smokers to agree with the statement.

7.1.2 How these findings add to the literature

The findings add to literature on the prevalence of smoking, the quantity and frequency of smoking, smoking in smokefree spaces, and quit smoking intentions by using a largely representative sample of university students. In particular, the findings add to evidence that indicates a lower prevalence of smoking in individuals with higher educational attainment compared to those with lower educational attainment, both in New Zealand, and elsewhere.[45-48] The findings also suggest that this effect is seen early (for instance among young university students) and therefore it may not be related solely to the effects of a university education. It

may also be related to other characteristics of young people who go on to attend university (such as tending to be from families in higher socioeconomic groups). Furthermore, these findings add to a growing body of international research that suggests that females have lower prevalence of smoking than males.[26 49 50]

The findings also adds new knowledge with regards to the potential impacts of future cigarette price increases on smoking intentions in the presence of e-cigarettes.[32] This finding is potentially applicable not only to university students but also to other students in tertiary education and potentially to parts of the general population.

Likewise, the findings provide new knowledge on perceptions around three potentially new long-term tobacco control measures for New Zealand (i.e. "Being smokefree is part of the New Zealand way of life," "The number of places allowed to sell cigarettes and tobacco should be reduced," and "Cigarettes should no longer be sold in New Zealand in 10 years"). Consistent with other studies from overseas[51-56] this thesis found current smokers were less likely to support the three statements. Only two previous studies in New Zealand had explored these statements using data from the general population.[43 44]

7.2 Cigarette smoking – Australian university students

This section estimated the prevalence and smoking patterns of UQ students (**Section 5.2**). Less than half (43.5%) of participants ever smoked, 8.6% currently smoked, and 5.0% smoked at least daily. The majority of participants smoked five cigarettes or fewer per day (61.9%), smoked their first cigarette >60 minutes after waking up (68.1%), did not smoke in smokefree spaces (indoors 98.3%, outdoors 83.5%), and planned to quit smoking (61.3%). About one in ten (13.3%) smokers had tried to quit smoking (78.4% of whom made 1-3 serious quit smoking attempts).

Males were significantly more likely than females to report ever, current, and daily smoking, smoking more than five cigarettes/day and ever trying to quit, whereas females were significantly more likely than males to report not smoking in indoor smokefree spaces (**Section 5.2.3**). Older respondents were significantly more likely than younger respondents to report ever smoking, smoking at least daily, smoking more than 5 cigarettes/day, and smoking the first cigarette within 60 minutes of waking (**Section 5.2.2**).

The majority of respondents agreed or strongly agreed (agreed) with three statements on potentially new long-term tobacco control measures for Australia (**Section 5.2.1**). Overall, 92.2% agreed with "I prefer to be in a smokefree environment", 82.1% agreed with "The number of places allowed to sell cigarettes and tobacco should be reduced", and 75.9% agreed with "Cigarettes should not be sold in Australia in 10 years". Current smokers were significantly more likely than non-smokers to agree with all three statements.

7.2.1 Findings of the literature review

The prevalence estimates reported in this thesis were lower compared to smoking estimates in the general population in Australia (national and state levels). At a national level, data from the National Health Survey show that 13.8% of adults smoked daily in 2017-18,[57] while the prevalence of current smoking in the state of Queensland was 11% in 2018.[58]

Data on smoking among university students in Australia are scarce. A 2011 survey conducted at Griffith University, Australia reported prevalence of smoking as 13.2% in students aged 18-20 years, 21.4% in students aged 21-25 years, and 24.0% in students aged 26-30 years.[59] And, a 2007 survey of students aged 17-24 years at Curtin University, Australia found that 10.2% of respondents were current smokers (occasional or daily smokers were defined as current smokers in this study).[60] Current smokers were more likely to be male, and older (i.e. aged ≥25 years), consistent with previous research.[1] However, analyses in this thesis did not distinguish domestic from international students, in contrast to analysis by Guillaumier and colleagues.[1]

Consistent with other studies in Australia[51 53 54 56] and elsewhere,[52 55] the results of this current thesis found current smokers to be least supportive of potentially new long-term tobacco control measures for Australia. Despite the changing norms towards smoking, and support shown by smokers for smokefree policies, some studies still find this group to be less supportive of smokefree policies.[51-56]

7.2.2 How these findings add to the literature

My research findings add to a growing body of research that suggests that the prevalence of smoking among university students in Australia is lower in comparison to the prevalence of smoking at either state or national levels in Australia.[1 54] This finding was anticipated, given

the well-demonstrated association between smoking and educational attainment. The findings of the current research project also support previous work, which found lower smoking prevalence in females than in males.[1 26 49 50] Moreover, the findings add new knowledge on the perceptions of university students about three potentially new long-term tobacco control measures for Australia.

7.3 Cigarette smoking – Comparing New Zealand and Australian university students

This section compares the findings of T1 data (NZ component) with UQ results (**Sections 4.1.2 and 5.2**). Ever smoking (49.9% vs 43.5%) and current smoking (10.4% vs 8.6%) was higher among New Zealand than UQ students, but daily smoking was similar (5.6% vs 5.0%), as was the proportion of smokers who smoked 1-5 cigarettes/day (64.2% vs 61.9%) and smokers who smoked their first cigarette more than 60 minutes after waking up (69.7% vs 68.1%). More respondents in the UQ than the New Zealand sample reported never or almost never smoking in indoor (98.3% vs 87.4%) or outdoor (83.5% vs 65.1) smokefree spaces. The New Zealand sample had a higher proportion of respondents who indended to quit smoking (68.7% vs 61.3%) or who had tried to quit smoking in the previous 12 months (37.8% vs 13.3%) than did the UQ sample. Proportions of participants who had made 1-3 serious quit smoking attempts were marginally higher in UQ than New Zealand sample (73.8% vs 78.4%).

With regards to responses to the three statements about potentially new smokefree policies for New Zealand and Australia, 50.7% NZ vs 92.2% UQ agreed with the first statement ("Being smokefree is part of the New Zealand way of life" in the New Zealand survey, and "I prefer to be in a smokefree environment" in the UQ survey), 68.7% vs 82.1% agreed with the second statement about reducing the number of places allowed to sell cigarettes and tobacco, and 53.0% vs 75.9% agreed with the third statement about cigarettes no longer being sold (in New Zealand or Australia) in 10 years. However, the first statements in both surveys may not be completely comparable because one (used in the UQ survey) is a preference and the other (used in the New Zealand survey) is an opinion.

7.3.1 Findings of the literature review

A number of factors could explain the observed differences between the samples. These can be divided broadly into sample-specific factor and country-specific factors. To address the former: the UQ sample was obtained from a single institution and despite participation from a number of campuses (St Lucia, Herston and Gatton),[61] all would reasonably be expected to have or be subject to identical or at the very least, similar policies with regards to tobacco use on campus. Furthermore, any policies would be expected to be enforced in a consistent manner across campuses.[62] In contrast, the New Zealand sample was recruited from eight, independently run, universities that had different smokefree campus policies (**Table 2.2.1**) and/or whose enforcement may vary (possibly widely).[63-70] UQ had not adopted a total smokefree campus policy at the time of this research[61] but it was in the process of transitioning into a smokefree university where smoking and vaping on campus would be banned.[71]

To address country-specific factors; these may be factual and tangible or percived and intangible. The cost of cigarettes/tobacco products is substantially higher in Australia than in New Zealand.[72-75] A high cigarette/tobacco price is one of the most effective tobacco-control measures, because it prevents initiation into smoking in young people, promotes smoking cessation, reduces relapse among quitters, and lowers tobacco consumption among people who continue to smoke.[34-36 38 39] The lower estimates of the prevalence of smoking among the UQ sample may underline the important role of cigarette prices on smoking.

Australia may have comparatively stricter restrictions on tobacco access than New Zealand, which in turn may make it harder for youth to take up smoking or maintain the habit. Previous studies showed that about 62% of young people aged 15-17 years in New Zealand purchased tobacco from commercial outlets in 2009[76] compared with 13% of young people aged 12-17 years in Australia who purchased their own cigarettes in 2008.[77] Although recent data are lacking, it is possible that differences in tobacco access may still be present and might be reflected in the estimates of the prevalence of smoking.

Despite the relatively similar smokefree regulations between the two countries,[22 23] Australia has substantially higher infringement fines for persons caught smoking in smokefree spaces, than does New Zealand.[22 24] For example, individuals who smoke in a smokefree area in Australia may receive an AUD75-150 infringement notice (on-the-spot fine) and an occupier

(i.e. the person managing/controlling or in charge of an enclosed place or part of an enclosed place), who allows smoking in a smokefree area may receive an AUD100-150 infringement notice or AUD500-11,000 fine.[22] In contrast, an individual who contravenes smokefree conditions in New Zealand is liable for a fine not exceeding NZD400 while a corporate body (i.e. a business establishment) is liable to a fine of up to NZD4,000.[24] Enforcement, including warnings and fines, is likely to result in better compliance of policy.[78] People are more likely to knowingly violate a policy or condition if they perceive its enforcement to be weak or lacking.[79]

The proportions of smokers who indicated that they did not smoke in indoor or outdoor spaces where smoking was banned, were significantly higher in the Australian than in the New Zealand survey. This might highlight subtle differences in how smokefree policies are enforced or social norms and expectations around smoking, and following rules. As Edwards and colleagues note in their paper,

> High levels of compliance were achieved despite a largely passive system of monitoring and enforcement, concerns about limited resources available for enforcement and implementation, and the perception by some of a missed opportunity to demonstrate rigorous enforcement through early prosecutions of non-compliant workplaces. Ministry of Health officials argue that their approach reflected a policy decision to focus on educating and working with employers, including establishments reported to have breached the law, with prosecution for cases of repeated and flagrant violation (personal communication) used as a last resort.[80]

This might suggest a focus on education rather than penalties (e.g. fines, prosecution) for violations of the smokefree policy in New Zealand.

The proportion of smokers who reported trying to quit smoking were higher in the New Zealand than the Australian survey. It is unclear whether recent policy change in New Zealand around nicotine-containing e-cigarettes that has thrust vaping into the limelight, may have incentivised smokers to consider quiting, or switching to vaping. Vaping is generally cheaper than smoking in New Zealand[81] and a previous study reported that smokers found vaping to be equally satisfying.[82]

Previous studies reported strong support for potentially new long-term tobacco control policies for Australia,[51 53 54 56] consistent with current results. Support for these potential policies among the New Zealand sample was similar to the support reported in previous New Zealand research.[43 44]

7.3.2 How these findings add to the literature

These findings add to a growing body of research in both countries that indicates a lower prevalence of smoking among university students, as compared to general populations of similar age. Participants also smoked fewer cigarettes cigarettes/day (1-5), took longer to smoke the first cigarette after waking up (>60 minutes), and planned to quit smoking, suggesting low nicotine tolerance. This itself, suggests that with appropriate support, it may be easier for these students to quit smoking[26] and because of this students who wish to quit smoking should be encouraged and supported to do so by their university health/student services.

7.4 E-cigarette use – New Zealand university students

Compared with T1, ever vaping (37.0% vs 45.6%), current vaping (6.5% vs 12.6%) and daily vaping (2.5% vs 5.1%) were all higher at T2, and more respondents reported not vaping in indoor (79.6% vs 70.0%) or outdoor (71.3% vs 63.0%) smokefree spaces at T1 (**Sections 4.1.3 and 4.2.3**). Estimates of the prevalence of vaping to quit smoking (6.2% vs 5.7%) or for curiosity (63.7% vs 63.8%) were similar at T1 and T2, respectively, but estimates of the prevalence of vaping for enjoyment were modestly higher at T2 than at T1 (T1 13.4% vs T2 16.3%). Estimates of the prevalence of use of nicotine-containing devices among respondents who vaped daily for ≥1 month were similar (80.3% vs 80.3%) at both T1 and T2. Slightly more respondents at T1 than at T2 believed that e-cigarettes were less harmful than tobacco cigarettes (75.3% vs 71.7%); the response rates were similar (70.4% vs 72.5%). These results show a substantial increase in e-cigarette use generally and potentially in smokefree spaces at T2, a period when nicotine-containing vaping products were more readily available and accessible,[19] compared to T1 when access to these products was restricted.[21] Increased use of e-cigarettes was, however, not matched with declines in cigarette smoking.

In both T1 and T2 surveys, younger respondents were significantly more likely than older respondents to report ever vaping and vaping out of curiosity, while older respondents were

significantly more likely than younger respondents to report vaping daily for ≥1 month and vaping to quit smoking (**Sections 4.1.3.2 and 4.2.3.2**). Males were significantly more likely than females to report ever, current, and daily vaping, daily vaping for ≥1 month and thought that e-cigarettes were less harmful than tobacco cigarettes (**Sections 4.1.3.3 and 4.2.3.3**). Māori were significantly more likely to report ever vaping than non-Māori (**Sections 4.1.3.4 and 4.2.3.4**).

Current smokers were significantly more likely than non-smokers to report ever, current, daily, and daily vaping for ≥1 month, while non-smokers were significantly more likely to report not vaping in indoor or outdoor smokefree spaces, and to give curiosity as the primary reason for use (**Sections 4.1.3.5 and 4.2.3.5**).

In relation to the three statements about vaping, overall, the majority of respondents in both surveys disagreed with the second statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed" (74.2% vs 73.1%) and third statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed" (53.5% vs 53.0%), but did not disagree with the first statement "If someone vapes around me they are causing me harm because of second-hand vapour" (30.6% vs 33.4%) (**Sections 4.1.3.1 and 4.2.3.1**). Younger respondents were more likely than older respondents to disagree with the first statement, as were males and current smokers than were females and non-smokers, respectively. Females were more likely than males, and current smokers more likely than non-smokers, to disagree with the second statement and the third statement. Māori were more likely than non-Māori to disagree with the first statement.

7.4.1 Findings of the literature review

There are currently no data on vaping among tertiary education students in New Zealand and current studies predominantly come from North America (particularly USA) and Europe. The estimates of the prevalence of ever vaping across studies from the USA range from 27-45%[8 11 83-85] and common predictors of vaping include cigarette smoking and male gender. Across European studies ever vaping prevalence estimates range from 23-31% and cigarette smoking (current or previous) is a common predictor of vaping.[14 86 87] A Korean study with a large sample (n=2,167) of university students aged 19-29 years reported similar findings; 21.2% ever vaped and male gender, cigarette smoking and family or friends who smoke were predictors of

vaping.[10] I was not aware of any published studies on e-cigarette use in Australia at the time of writing this document.

In the general population, data from the New Zealand Health Survey (NZHS), an annual survey of a nationally representative sample of over 13,000 adults who are "usually resident" in New Zealand, show that in 2018/19 people aged 18-24 years had the highest prevalence of e-cigarette ever vaping (47.3%) and current vaping (8.8%).[25] The prevalence of daily use among this age group was 4.5% (third highest after 35-44 year-olds (4.9%) and 25-34 year-olds (5.1%)).[25]

A comparison of the findings of a section of T1 data on the patterns of e-cigarette use among students aged 18-24 years with the national results of e-cigarette use in people aged 18-24 years (i.e. the 2017/18 NZHS)[25] show that the estimate of the prevalence of ever e-cigarette use was higher at T1 (40.5% vs 35.4%), current use was similar (6.1% vs 6.2%), and daily use was significantly lower (1.7% vs 4.0%).[88] Furthermore, comparisons between people aged <25 years at T2 with the 2018/19 data among people aged 18-24 years in New Zealand[25] show similar estimates of ever (49.1% vs 47.3%) and daily use (5.5% vs 4.5%), but significantly higher estimates of the prevalence of current use (14.0% vs 8.8%). Data in this thesis, and the NZHS, suggest that respondents aged <25 years were more likely than those aged ≥25 years to report ever and current e-cigarette use, males were more likely than females to report ever, current, and daily use, and Māori were more likely than non-Māori to report ever e-cigarette use. This suggests that, unlike cigarette smoking, university students are similar to people in the wider population with respect to e-cigarette use (apart from current use). It may be that younger people (university or beyond) have relatively similar characteristics with respect to vaping (e.g. knowledge, reasons for use and access to vaping products).

The estimates of the prevalence of e-cigarette ever use reported in this thesis (T1 and T2) are consistent with estimates reported in two previous studies (37-45%) among university students in the USA.[83 84] However, this thesis reports more recent data and the samples of both surveys had larger proportions of males (T1 39.9%, T2 43.1%), compared with the two studies from the USA (21-22% males).[83 84] The estimate of the prevalence of current vaping at T1 (6.5%) is similar to a previous study of French college students (5.7%),[14] while the estimate of prevalence at T2 (12.6%) is similar to other studies among college/university students (7.5-14.9%).[8 83-85 89] Comparison of the estimates of prevalence reported in the cited studies with wider populations of similar age in respective countries was not done.

In this thesis, males were significantly more likely than females to report ever, current, and daily vaping, and this is consistent with previous research.[9 11 84 85] This finding was anticipated, given that males are more likely to smoke (ever, current and daily) than females[26] and smoking is strongly associated with e-cigarette use.[8-11 13 14] Similarly, findings of higher estimates of the prevalence of e-cigarette use among current smokers compared with non-smokers are consistent with those reported in previous research.[6 13 15] Furthermore, findings of e-cigarette use, by ethnicity, with significant differences only for ever use (Māori > non-Māori) in both T1 and T2 survey cycles mirrors the findings of cigarette smoking where only ever smoking was significantly different (Māori > non-Māori).

Vaping in smokefree spaces (indoor and outdoor) was uncommon, with 79.6% of vapers reporting that they did not vape in indoor smokefree spaces and 71.3% reporting that they did not vape in outdoor smokefree spaces at T1, and 70.0% and 63.0% of vapers at T2 reporting not vaping in indoor and outdoor smokefree spaces, respectively. However, a sharp fall in T2 estimates (compared with T1) is of concern. Non-smokers were more likely to report not vaping in smokefree spaces than current smokers. Most important was the finding of a larger proportion of smokers not smoking in smokefree spaces compared with vapers not vaping in smokefree spaces. Because of the rapid expansion of vaping outlets and e-cigarette users across the country, this finding should be investigated further, possibly in different population groups, to identify any emerging trends. It may be that more vapers are vaping in smokefree spaces because they perceive e-cigarettes as less harmful than tobacco cigarettes (**Sections 4.1.3, 4.2.3 and 5.3**) or because of greater tolerance by the population to vaping in these spaces.

Using data from Wave 2 of the Population Assessment of Tobacco and Health (PATH) dataset (2014–2015),[90] Dunbar and others found that 58% of dual users (people who vaped and smoked cigarettes) reported past 30-day e-cigarette use in public smokefree places. In this study, reported use to cut down on cigarette smoking (OR: 2.38, 95% CI 1.86-3.05), as an alternative to quitting tobacco (OR: 1.71, 95% CI 1.37-2.13), or because of belief that e-cigarettes help people to quit tobacco cigarettes (OR: 1.52, 95% CI 1.20-1.92) were significantly associated with increased odds of e-cigarette use in smokefree places.[90]

Consistent with previous research,[13 19 91] curiosity was the leading reason for e-cigarette use overall (63.7% vs 63.8%). Younger respondents were more likely to report vaping out of curiosity, while older respondents were more likely to report vaping to quit smoking. This was

expected, given that estimates of the prevalence for smoking were higher in older respondents and they would therefore be expected to have higher intentions to quit smoking, than younger respondents. Non-smokers were similarly more likely than current smokers to vape out of curiosity. The second most commonly reported reason for vaping was enjoyment (16.3% vs 13.4%), and quitting smoking was the third commonly reported reason (T1 6.2%, T2 5.7%). Given that overall, about 11% of the combined sample currently smoked (T1 10.4%, T2 11.3%), and the vast majority of smokers also vape, it is very likely that some vapers used e-cigarettes as a substitute to cigarette smoking or when they were not allowed, or unable, to smoke. If this assumption is indeed true, it would indicate that vaping could potentially create new nicotine addicts, who could progress on to smoking cigarettes, rather than aid smokers to quit smoking.[92-95]

Regardless of survey cycle, the proportion of respondents who perceived e-cigarettes to be less harmful than tobacco cigarettes was higher in this thesis, in comparison to previous estimates, at national level (71.7-75.3% vs 38%).[96] Males were significantly more likely than females in both survey cycles to believe that e-cigarettes were less harmful than tobacco cigarettes.

With regards to the three statements about vaping, respondents in both surveys were more likely to support, or to agree with, the two statements that would allow vaping in smokefree spaces, but not support, or agree with, the statement that would restrict use in public spaces or exposure to second-hand vapour. This is a significant finding of this thesis and additional data are required to understand it better. One USA study reported that college students were generally accepting of e-cigarette use in public spaces compared with conventional cigarette smoking in public.[97]

7.4.2 How these findings add to the literature

The findings generate new knowledge on the patterns of e-cigarette use in a tertiary education setting in New Zealand, which was lacking, and provide reasonably comparable estimates of prevalence to national estimates in terms of ever, current, and daily e-cigarette use (particularly among the 18-24 year age band). Furthermore, they add new knowledge with regards to perceptions about e-cigarette use in public spaces, which have not been assessed before.

7.5 E-cigarette use – Australian university students

This section estimated the prevalence and patterns of e-cigarette use among UQ students. About a fifth (19.9%) of respondents reported ever use, 1.8% current use and 0.7% daily e-cigarette use. The majority of respondents (91.5%) did not vape in indoor and or outdoor (84.5%) smokefree spaces, and reported curiosity as the primary reason for use (71.2%). Of respondents who vaped daily for ≥1 month, 40.1% used nicotine-containing devices. Regardless of use, 71.8% of respondents believed that e-cigarettes were less harmful than tobacco cigarettes.

Older respondents were significantly more likely than younger respondents to report daily use, daily use for ≥1 month, using nicotine-containing devices and vaping to quit smoking, while younger respondents were more likely to report not vaping in smokefree spaces (indoor and outdoor), curiosity as the primary reason for use and belief that e-cigarettes were less harmful than cigarettes. Males were more likely than females to report e-cigarette use (ever, current, daily, daily for ≥1 month), use of nicotine-containing devices, use to quit smoking, or for enjoyment, and belief that e-cigarettes were less harmful than tobacco cigarettes, while females were more likely report vaping out of curiosity and not vaping in smokefree spaces (indoor and outdoor).

Current smokers were more likely than non-smokers to report e-cigarette use (ever, current, daily, daily use for ≥1 month), use of nicotine-containing devices, and use of e-cigarettes to help quit smoking, while non-smokers were more likely to report vaping out of curiosity.

7.5.1 Findings of the literature review

Data from Australia show that overall, the prevalence of current e-cigarette use was 1.2% in the general population in 2016.[98] This estimate is similar to the estimate of 1.8% reported in the UQ sample, whose data were collected in 2017. However, current use (9.9% vs 4.4%) and daily use (3.6% vs 1.5%) among current smokers, were significantly higher in the current study compared with the Australian general population. This finding was unexpected because vaping is generally associated with tobacco use[6-11 13 14] and the prevalence of smoking is generally lower among university students (including this sample) compared with the general population.[1 54] A plausible explanation for this finding may be related to the location of UQ campuses (in urban settings), access to online vaping platforms (which may not be widely accessible across Australia) or social norms with regards to smoking and vaping.

7.5.2 How these findings add to the literature

The findings generate new knowledge on the patterns of e-cigarette use in a tertiary education setting in Australia, which was previously lacking. They also provide reasonable estimates of the prevalence of smoking and vaping as a comparison to the estimates of prevalence at a national level at the time of the survey; the research also adds new knowledge on perceptions on vaping in public spaces.

7.6 E-cigarette use – Comparing New Zealand and Australian university students

This section compares the findings of the New Zealand survey with the Australian survey. Prevalence estimates of e-cigarette ever use (37.0% vs 19.9%), current use (6.5% vs 1.8%) and daily use (2.5% vs 0.7%) were higher in the New Zealand than in the UQ sample. Moreover, the New Zealand sample had substantially lower estimates of respondents who reported not vaping in indoor (79.6% vs 91.5%) or outdoor (71.3% vs 84.5%) smokefree spaces compared with the UQ sample. In both samples, curiosity was the most common reason for use (NZ 63.7%, UQ 71.2%), followed by enjoyment (NZ 13.4%, UQ 8.8%), and quitting smoking (NZ 6.2%, UQ 5.8%). Nicotine use among New Zealand respondents who vaped daily for ≥1 month was over twice that in the equivalent UQ respondents (80.3% vs 40.1%).

The majority of respondents believed that e-cigarettes were less harmful than tobacco cigarettes (NZ 75.3%, UQ 71.8%). These results are consistent with the findings of a 2016 study in Australia, which found the general public perceived e-cigarettes to be less harmful than traditional cigarettes and potentially effective in helping people to quit smoking.[99] This perception may be associated with the nature of e-cigarette products because they do not contain tobacco and do not rely on combustion,[20 93] and the e-liquids/e-juices may or may not contain nicotine. This may result in lower levels of harmful compounds in e-cigarette emissions.[61 100]

Despite the low harm perception, support towards vaping in smokefree spaces was weak in both samples. About three quarters of respondents (NZ 74.2%, UQ 83.7%) disagreed with the statement "People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed" and over half of respondents (NZ 54.5%, UQ 61.0%) disagreed with the statement "People should be allowed to vape/use e-cigarettes in outdoor places where smoking

is not allowed". This relatively weak level of support for vaping in public smokefree spaces may reflect the high number of respondents who reported not vaping in these spaces.

7.6.1 Findings of the literature review

A number of factors could explain the observed differences in e-cigarette use behaviour, reasons for use and harm perceptions between the two samples. First, although data for the two samples were collected at a time when both countries had similar policies with regards to e-cigarettes containing nicotine,[19 20] the regulatory environment in Australia appears to have been more strictly enforced than in New Zealand.[101] E-cigarettes were freely promoted, advertised and marketed in New Zealand but not in Australia where advertising, promotion and display were prohibited.[102] Furthermore, the Australian vaping environment has a complex mix of both Federal and State laws and regulations, unlike New Zealand. Similarly, the e-cigarette use behaviour of respondents in the UQ sample, some of whom come from other states, is likely to be shaped by a wide range of experiences.

Second, despite New Zealand and Australia having comparable smokefree regulations,[22 23] Australia has substantially higher infringement fines for persons caught breaching smokefree regulations than New Zealand.[22 24] Because the current smokefree regulations apply to smokers and vapers equally, people in Australia would be expected to be less likely to flout these regulations than people in New Zealand.[79]

The higher levels of disagreement with the second and third statements about vaping in public spaces among the UQ sample, in comparison to the New Zealand, sample may be an indication of the stronger anti-smoking and anti-vaping sentiments in Australia compared with New Zealand, as reflected in the support for potentially long-term tobacco control policies for Australia[51 53 54 56] and New Zealand.[43 44]

7.6.2 How these findings add to the literature

These findings generate new knowledge on e-cigarette use in tertiary education settings in New Zealand and Australia and contribute to global research on e-cigarette use in this population group. They also strengthen evidence that suggests higher ever and current e-cigarette use in

tertiary students compared with people in similar age groups in the general population in New Zealand,[25] Australia[98] and beyond.

7.7 The Smokefree 2025 goal

Less than half of respondents in both the T1 and T2 surveys were aware of the Smokefree 2025 goal before completing the survey (T1 43.3% vs T2 47.2%). Despite low levels of awareness, there was strong majority support for the goal (95.5% vs 96.1%) and belief that the goal can be achieved (87.3% vs 89.8%), and that e-cigarettes/vaping can help achieve it (85.4% vs 83.6%).

The results of Smokefree goal awareness in the two surveys were similar to those obtained from the 2018 Youth Insights Survey (YIS), which included 2,689 Year 10 students (ages 14-15) from across New Zealand and 45% of whom were aware of the Smokefree goal.[103] YIS forms part of the New Zealand Youth Tobacco Monitor (NZYTM), a collaborative effort by the Health Promotion Agency (HPA) and Action on Smoking and Health (ASH).[103] Similarly, support for the Smokefree goal was high in this thesis and the 2018 YIS (95.5-96.1% vs 80%). This is very encouraging from a public health perspective and indicates that participants appreciated the potential benefits that a "smokefree" society might provide.

The strong optimism among respondents that the Smokefree goal can be achieved, and that e-cigarettes/vaping can help to achieve it was exciting. The later supports the MOH position on the potential role of vaping on tobacco control in New Zealand.[104]

Awareness

In both surveys, Māori were 1.6-1.7 times as likely as non-Māori, current smokers were 1.5-2.0 times as likely as non-smokers, and current vapers were 1.4-2.4 times as likely as non-vapers to be aware of the Smokefree goal. At T2, participants aged <25 years were 1.67 times as likely as participants aged ≥25 years to be aware of the Smokefree goal.

The higher awareness estimates for the Smokefree goal among Māori than non-Māori reported in this thesis are in contrast to results reported in the 2018 YIS where awareness was higher in the NZ European/Other population than they were in the Māori population. These differences in the awareness of the Smokefree goal between Year 10 students (YIS sample) and university students (this thesis) may be explained, in part, by the the potential differences in socioeconomic characteristics of Māori students at Year 10 level and Māori students at

university level. It is likely that the Year 10 sample was made up of students from a much wider sociodemographic mix than Māori students attending university, because secondary education is free at public schools, hence more accessible than university education.[105] Māori students attending university are therefore more likely to come from families with higher educational attainment, higher incomes and healthier habits and subsequently less likely to smoke or be around smokers. Another possible reason for higher awareness of the Smokefree goal among Māori than non-Māori may be because Māori have a higher prevalence of smoking than do non-Māori and would therefore be affected in a more direct manner by interventions that are aimed at reducing smoking, such as cigarette/tobacco tax increases[106] and Smokefree marae. A marae is a Māori communal facility that belongs to a particular tribe (iwi), sub-tribe (hapū) or family (whānau) and is a place where meetings (hui), celebrations, funerals and other important cultural events take place.[107] Some Marae house health and family services, educational workshops and host educational visits.[107]

The greater awareness of the Smokefree goal among vapers than among non-vapers underline current evidence of the relationship between smoking and vaping: the vast majority of vapers also smoke (presently or previously)[6 13 15] and would share most, if not the same, concerns that current smokers might have in relation to tobacco control interventions/policy measures.

A finding of greater awareness of the Smokefree goal among younger participants was unexpected considering that younger participants generally have a lower prevalence of both smoking and vaping than older participants. It may be that younger participants have grown up in an environment with increased information and resources about smoking cessation than their older counterparts.

Support

In both the T1 and T2 surveys, non-smokers were over 6 times as likely as current smokers to support the Smokefree goal. This is in spite of lower awareness of the Smokefree goal among non-smokers in comparison to current-smokers. It is possible that non-smokers viewed the potential benefits of a "smokefree" society with a clear mind while current-smokers may have been concerned about the need to maintain their nicotine addiction.

Furthermore, at T2 females were 2.55 times as likely as males to support the Smokefree goal. This could potentially be explained by the fact that the prevalence of smoking was significantly

higher in males than females and smokers are generally expected to be less likely to support interventions that might disrupt access to cigarettes.

Belief that the Smokefree goal can be achieved

In both surveys, non-smokers were over 4 times as likely as current smokers to believe that the Smokefree goal can be achieved. This finding is consistent with 2012 data from Year 10 students that found never smokers more likely to believe that the Smokefree goal can be achieved as compared to current or ex-smokers (37% vs 32%).[108]

Furthermore, at T2, participants aged ≥25 years were more than twice as likely as participants aged <25 years to believe that the goal can be achieved. Nonetheless, it is unclear why older participants were significantly more optimistic about the goal than younger particiants. It could be, however, that older participants have had a lot more exposure to and potentially deeper conversations about the Smokefree goal than younger participants.

Belief that e-cigarettes/vaping can help to achieve the Smokefree goal

In both surveys, participants aged <25 years were twice as likely as participants aged ≥25 years to believe that e-cigarettes/vaping can help to achieve the Smokefree goal. This finding suggests higher awareness of e-cigarettes among younger participants than older participants in these samples. It is also possible that younger participants might have been more positive about vaping because they had a positive experience with vaping or may have been considering taking up vaping; however, the questionnaire did not assess awareness of e-cigarettes/vaping or intentions to vape among non-vapers.

Current vapers were over four times as likely as non-vapers to believe that e-cigarettes/vaping can help to achieve the Smokefree goal. This finding was expected given that those who vape would naturally be expected to be more positive about the products they use than non-vapers. In contrast, a T1 finding of non-smokers being more than twice as likely as current smokers to believe that e-cigarettes/vaping can help to achieve the Smokefree goal, was unexpected because smokers would be expected to be more optimistic about the role of e-cigarettes/vaping in tobacco control since a large proportion of smokers also vape. One possible reason may be that smokers who vaped may not have done so to quit smoking but rather as a sabstitute to smoking when they could not or were not allowed to smoke.

7.8 How these findings add to the literature

These results provide new knowledge in the area of the awareness, support for, and beliefs around the Smokefree goal in a sub-group of the population (i.e. university students). This assessment had not been done previously.

7.8.1 How Government policy impacts on smoking and vaping behaviour

Governments have the responsibility to act in the best interests of their citizens and have always played substantial roles in promoting and protecting the health of their populations.[109] Substantial evidence indicates that higher cigarette/tobacco prices, clean air/smokefree restrictions, and mass media campaigns can considerably reduce the prevalence of smoking, especially when part of a comprehensive tobacco control strategy.[110] These policies not only reduce an initiation into smoking, but also promote quitting among current smokers. Furthermore, Government policy on alternatives to smoking (e.g. e-cigarettes/vaping) can have a direct or indirect impact on smoking. Favourable policies can encourage smokers to switch to potentially less harmful alternatives and reduce many of the health consequences associated with smoking.

7.8.2 Recruiting university students

The years spent at university are an important life phase for students, during which they develop and engage in a range of risky behaviours, including cigarette smoking.[55] Hence universities represent important settings for the implementation of public health initiatives such as tobacco control.[1] Notwithstanding recruitment challenges, university student samples can generate important information that may be generalisable to a broader population group (e.g. tertiary students beyond only the university context), depending on the sampling strategy and the response rate.

7.9 Policy implications

This section highlights the implications of my research for policy and interventions on cigarette smoking and e-cigarette use in New Zealand, and advancing the Smokefree 2025 goal. Policy implications for Australia are discussed in the number of manuscripts in **Chapter 8** (research outputs).

Smoking

My findings suggest that the Smokefree 2025 goal target of a smoking prevalence of 5% or less could be achieved in university students. Students smoked few cigarettes (1-5/day), took longer to smoke the first cigarette after waking up (>60 minutes), and planned to quit smoking, suggesting low nicotine tolerance.

Students who smoke can be encouraged and supported to quit smoking. This could be done through incentivising students who have quit smoking themselve to support their peers who wish to quit do so (e.g. using "buddy" systems). Students who act as buddies could receive formal acknowledgement for their ettorts (e.g. a certificate). Universities (and other tertiary institutions) could also increase funding for smokefree services on campus and encourage students to develop and trial new mobile phone-based interventions to support students quit smoking.[26] The Government should also continue using high tax/price interventions to reduce the affordability of cigarettes/tobacco and promote smoking cessation and/or a switch to less harmful products such as e-cigarettes.[32]

Vaping

The findings suggest that e-cigarette use among university students might be quickly expanding, including in smokefree spaces. This calls for ongoing monitoring to ensure vaping does not undermine existing smokefree policies. Mass media campaigns (through radio, television, newspapers and the Internet, particularly social media platforms) could be used to educate the public about any potential benefits and harms that vaping might provide.

This research also suggest an unmet need for clear, accurate, and evidence-based information about vaping to give users confidence that vaping is indeed less harmful than smoking, but more harmful than not doing either. This may encourage smokers to transition to vaping and reduce tobacco use.

Smokefree goal

The implications of the findings in this thesis are threefold. First, they suggest that more work is required to raise the awareness of the Smokefree 2025 goal among the population in general and university students in particular. This could be achieved through comprehensive mass media campaigns that reach the wider population, over prolonged periods of time,[111] in addition to targeted communication on media platforms that are popular with students,[112 113] for example

Facebook (all universities in New Zealand have student associations that are very active on Facebook). The Smokefree 2025 goal material and information about cessation services could also be included in orientation packs for new students and as part of information packs for returning or continuing students (this could be in the form of email or hard copies e.g. pamphlets).

Second, they underscores the need to work with young people to address common public health challenges. Universities and other tertiary institutions in New Zealand could individually or collectively design and develop a regular competition (such as, "Health Info") or along the lines of the annual "Three Minute Thesis" (3MT) to enlighten students about health and other issues (e.g. smoking, vaping, alcohol and drug use/misuse, etc.) and work with them to find solutions. Tertiary institutions could also develop and offer short courses not for credit on the named challenges to students (at no extra cost) or invite public health experts to talk about these issues (guest lectures, etc.).

Third, ongoing data collection should be done to engage with the population and continuously monitor progress on this important and unique public health policy for New Zealand. This can be through dedicated surveys similar to Youth Insights Survey[103] or institution-specific internal surveys. Data on smoking, vaping and awareness of the Smokefree goal could also be collected as part of routine demographic data of students at enrolment.

7.10 Strengths of this research

This research has a number of strengths, including large sample sizes, novel comparisons, and use of largely validated research tools. These are underscored by the quality of manuscrips and articles produced from this research.[26 32 88 114 115]

7.10.1 The sample size and data weighting

This research used reasonably large samples (NZ: T1 1,854; T2 1,922, and UQ 5,172) that were comparable to source populations in New Zealand and University of Queensland, Australia. The New Zealand samples had a good representation of Māori and non-Māori participants and data were weighted by gender and university to try to make them representative of the student population at the time, despite the inability to undertake random sampling. The UQ sample was recruited mainly by e-mails sent to all students, thus provided an equal opportunity to all

students to participate. Combined, these factors make the findings potentially generalisable to the wider New Zealand and University of Queensland student populations.

7.10.2 Novel assessments and comparisons

The project conducted a number of assessments and comparisons that had not been done before in a university population in New Zealand or in Australia. These include surveys of smoking intentions in response to simulated cigarette price increases, perceptions on potentially long-term tobacco control policies (e.g. Australia and/or New Zealand being smokefree, reductions in the number of places cigarettes are sold and not selling cigarettes in 10 years), smoking and vaping in smokefree spaces, prevalence and patterns of vaping, awareness of, and perceptions on the Smokefree 2025 goal, and student health in the previous 12 months. Furthermore, the project compared estimates of the prevalence of smoking and vaping among student samples in New Zealand (all universities) and Australia (University of Queensland), which is the first time this has been done.

7.10.3 Research tools and procedures

The surveys (NZ and UQ) used questionnaires with similar core questions on smoking and vaping (**Appendix 12**) and the procedures were similar. Participation was voluntary in both components and participants could enter draws to win a price after survey completion as a token of appreciation (UQ component: an AUD500 Campus Travel Voucher, NZ component: one of ten NZD100 cash prizes).

7.11 Limitations of this research

This research has a number of limitations. First, participants were not randomly selected due to lack of access to complete enrolment lists of students in the NZ component. This predisposed the samples to volunteer bias, which can lead to overestimation or underestimation of the estimates of prevalence.[26] Data were weighted (NZ component) to partially address this. Second, respondents may have completed the survey based on personal interest in the topics, possibly overestimating reported estimates;[88] however, the questionnaires included a range of topics that could be of interest to the broader student population. Third, some respondents may have haphazardly select responses in an effort to complete the surveys and enter the prize draws. Fourth, the questionnaire did not include questions on the socioeconomic status of

participants. Socioeconomic status is an important factor in smoking and this may have affected the reported results. Furthermore, the questionnaires did not include questions that asked specificically whether respondents were domestic or international (in relation to New Zealand and Australia). International students are major sources of income in both countries and understanding their behaviour in regards to smoking, vaping, alcohol use, etc. is important from a public health angle.

7.12 Recommendations for future research

To further enhance understanding of how vaping could have an impact on the prevalence of cigarette smoking (and reduce smoking) and achieve the Government's goal for a smokefree country,[116] more research in this area is needed. The thesis examined smoking, vaping, and the Smokefree 2025 goal in university students. Future research should include other tertiary students, including university, polytechnic, institutes of technology,[117] and Wānanga.[118]

Second, the thesis examined data from two repeat cross-sectional surveys that occurred twelve months apart, but did not allow for evaluation of trends. Future studies should include a longer time frame to assess whether or not change in smoking prevalence is related to change in vaping prevalence, and perceptions of the Smokefree goal.

Third, the thesis did not investigate the onset of smoking and/or vaping among respondents. This information would help to assess whether students are smoking then transitioning to vaping or vice versa. It will also be useful to assess the reasons for smoking (e.g. for company, for fun when out with friends, to deal with stress or other health issues, etc.). Information on the socioeconomic characteristics of participants was also not collected. Socioeconomic status is an important factor in smoking and future research should include this information.

7.13 Conclusions

There is already strong empirical evidence that supports lower prevalence of smoking in people with higher educational attainment compared to individuals with lower educational attainment[45-48] and lower prevalence of smoking in university students compared with people of similar age in the wider population.[25] There is also growing evidence that suggests higher e-cigarette use in university students compared with the wider population.[25 98] This thesis adds value by being the first to assess these important public health issues in university students in

New Zealand (in the presence of two distinctly different policies on vaping) and to compare with data from another country (students in Australia). Furthermore, this thesis was the first to assess the Smokefree 2025 goal, using a reasonably representative national sample of university students in New Zealand.

I found that the estimates of the prevalence of cigarette smoking (current and daily) were lower among university students compared with people of similar age in the wider population in New Zealand and Australia. The estimates of the prevalence of smoking in New Zealand were similar at the two time points, despite different policies on e-cigarettes containing nicotine. It may be that the surveys occurred too soon after the policy change to allow for behaviour change. Another important finding was that students stated that they would reduce their smoking significantly through switching to e-cigarettes and quitting when cigarette prices increase.[32] Moreover, the majority of students were supportive of potentially new long-term tobacco control measures that would reduce availability of, and access to, tobacco products. This could have a major positive impact on public health.

I also found a large increase in e-cigarette use (in the New Zealand sample) and potentially in smokefree spaces at T2, a period when e-cigarettes containing nicotine were more readily available and accessible,[19] compared to T1 when access to these products was restricted,[21] but this increased use was not matched with declines in cigarette smoking. E-cigarette use among UQ students was significantly lower than among New Zealand students. Furthermore, UQ students were more likely to report not smoking or vaping in smokefree spaces than New Zealand students. Curiosity was the most common primary reason for vaping and the majority of respondents perceived e-cigarettes to be less harmful than tobacco cigarettes.

Moreover, I found that fewer than one in two respondents were aware of the Smokefree 2025 goal, but there was strong support for this goal and belief that it can be achieved, and that e-cigarettes/vaping can help to achieve it. This is the first time that awareness of, support for, and perceptions about the Smokefree 2025 goal has been assessed in university students in New Zealand.

7.14 References

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CHAPTER 8 – RESEARCH OUTPUTS

This chapter provides a brief description of the scholarly outputs of this research (i.e. journal articles, conference papers/abstracts and manuscripts under review). It also highlights the novel findings of this research and recommendations for policy and interventions to advance public health.

8.1 Journal articles

Five articles had been published from this research in peer-reviewed journals at the time of writing this chapter.

8.1.1 Cigarette smoking among university students aged 18-24 years in New Zealand: results of the first (baseline) of two national surveys.

This co-authored article (**Appendix 1**) was published in a peer-reviewed medical journal (BMJ Open) in December, 2019.[1] It describes the prevalence and patterns of cigarette smoking among university students in New Zealand aged 18-24 years, using March-May 2018 survey data. A full version of this paper is available at BMJ Open.

Abstract

Objectives

Although the smoking prevalence continues to decline in New Zealand (NZ) overall, little is known about smoking in university students. A 2013 survey of students aged 17-25 years found 14% were current, and 3% daily smokers. However, the sample did not include students from all NZ universities. This study examines the prevalence and patterns of cigarette smoking among students aged 18-24 years.

Setting

University students across NZ.

Methods

Data came from a March to May 2018 survey of students from all NZ universities, and were weighted to account for undersampling and oversampling, based on gender and university size. χ^2 tests were used to compare smoking by age, gender and ethnicity.

Participants

1,476 participants were included: 919 (62.3%) aged 18-20 and 557 (37.7%) aged 21-24 years; 569 (38.6%) male and 907 (61.4%) female, and 117 (7.9%) Māori and 1359 (92.1%) non-Māori.

Results

49.8% (95% CI 47.2 to 52.4) of respondents reported ever smoking, 11.1% (95% CI 9.5 to 12.9) currently smoked (smoked at least once a month) and 5.9% (95% CI 4.8 to 7.3) smoked at least daily (daily smokers). Of current smokers, 63.6% smoked 1-5 cigarettes/day, 45.8% smoked daily, 73.4% smoked first cigarette >60 minutes after waking, 86.0% never/almost never smoked in indoor and 64.6% in outdoor smokefree spaces, 69.9% planned to quit, and 32.4% had tried to quit.

Ever, current, and daily smoking were significantly higher in 21-24 compared with 18-20 year olds, and in males compared with females. Older participants were more likely to report smoking more cigarettes/day. Māori were more likely to report ever smoking than non-Māori.

Conclusions

Current smoking among NZ university students aged 18-24 appears to be declining but daily smoking could be increasing. However, many students appeared less addicted to nicotine, and willing to quit. We recommend increasing the availability of smokefree services for students who wish to quit.

Strengths and limitations of this study

- This is the first study in NZ to examine the prevalence of cigarette smoking, and patterns of smoking in a sample of university students across the country.
- The sample was weighted by gender and university size to improve its representation of the general NZ university student population.
- The main limitation of this study is that sampling was not random.

8.1.2 Change in smoking intentions of university students in New Zealand following simulated cigarette price increases: results of the first of two cross-sectional surveys.

This journal article (**Appendix 2**) was published in a peer-reviewed medical journal (New Zealand Medical Journal) in May 2020.[2] It describes how high cigarette prices could impact on the smoking habits of students (i.e. intentions to continue smoking, switch to vaping or quit smoking). This paper used data from the March-May 2018 survey and the full version of the paper is available at New Zealand Medical Journal.

ABSTRACT

AIM: Increasing cigarette prices is one of the most effective strategies to reduce smoking. This study examined changes in smoking intentions of university students following simulated price increases.

METHOD: Data came from a 2018 cross-sectional survey of university students. The sample comprised 187 current smokers (47% aged <21 years, 53% ≥21 years; 60% male, 40% female; 10% Māori, 90% non-Māori, and 18% current vapers). Students were asked how their smoking behaviour would change if the price of a packet of their regular cigarettes or RYO tobacco was increased by $5.00, $10.00, $15.00, or >$15.00.

RESULTS: The proportion of students who would smoke the same amount declined substantially, while students who would switch to e-cigarettes increased by large margins at price increases of $5.00, $10.00 and $15.00. Quit intentions increased at all price levels, but were stronger among younger students and females. Males were almost twice as likely to switch to e-cigarettes as females. Overall, more students would quit than switch to e-cigarettes.

CONCLUSION: Results show that increasing cigarette prices by ≥$15.00 per packet could lead to significant reductions in smoking among university students. Follow-up data is required to assess the differential effects of price increases on vaping.

8.1.3 Electronic cigarette use among university students aged 18–24 years in New Zealand: results of a 2018 national cross-sectional survey

This co-authored journal article (**Appendix 3**) was published in a peer-reviewed medical journal (BMJ Open) in June 2020.[3] It describes the prevalence and reasons for vaping, and the perceived harm of vaping compared with smoking. It used data from the March-May 2018 survey and the full version of the paper is available at BMJ Open.

ABSTRACT

Objectives

To examine electronic cigarette use, reasons for use and perceptions of harm among university students.

Design

Cross-sectional study.

Setting

University students across New Zealand.

Methods

We analysed data from a 2018 cross-sectional survey of university students, weighted to account for undersampling and oversampling by gender and university size. χ^2 tests were used to compare e-cigarette use, reasons for use and perceptions of harm by age, gender, ethnicity and cigarette smoking.

Participants

The sample comprised 1476 students: 62.3% aged 18–20 years, 37.7% aged 21–24 years; 38.6% male, 61.4% female; 7.9% Māori, and 92.1% non-Māori.

Results

40.5% of respondents (95% CI 37.9 to 43.1) reported ever, 6.1% (4.9-7.4) current and 1.7% (1.1-2.5) daily use. Regardless of frequency, 11.5% of vapers had vaped daily for ≥1 month, 70.2% of whom used nicotine; 80.8% reported not vaping in indoor and 73.8% in outdoor

smoke-free spaces. Among ever vapers, curiosity (67.4%), enjoyment (14.4%) and quitting (2.4%) were common reasons for vaping. 76.1% (73.4-78.7) of respondents believed e-cigarettes were less harmful than cigarettes.

More males than females reported vaping (ever, current, daily, and daily for ≥1 month), nicotine use and belief that e-cigarettes were less harmful than cigarettes. More participants aged 18-20 reported not vaping in outdoor smoke-free spaces, vaping out of curiosity and belief that e-cigarettes were less harmful than cigarettes, while more participants aged 21-24 vaped daily for ≥1 month and for enjoyment. More Māori than non-Māori ever vaped. More cigarette smokers than non-smokers vaped (ever, current, daily, and daily for ≥1 month), used nicotine and vaped to quit, while more non-smokers did not vape in smoke-free spaces and vaped out of curiosity.

Conclusions

Our results suggest high prevalence of e-cigarette ever and current use, particularly among males and smokers. Many vaped out of curiosity and perceived e-cigarettes as less harmful than cigarettes.

Strengths and limitations of this study

- This is the first study in New Zealand to examine e-cigarette use in university students.
- Data were weighted to improve representation of the New Zealand university population.
- The main limitation of this study is that sampling was not random and our convenience sample is susceptible to volunteer bias, which could lead to underestimation or overestimation of prevalence estimates.

8.1.4 Attitudes towards the New Zealand Government's Smokefree 2025 Goal associated with smoking and vaping in university students aged 18-24 years: results of a 2018 national cross-sectional survey.

This co-authored journal article (**Appendix 4**) was published in a peer-reviewed medical journal (BMJ Open) in November 2020.[4] It describes the associations between the awareness of, support for, and perceptions about the Smokefree 2025 goal among students aged 18-24 years. It used data from the March-May 2018 survey and the full version of the paper is available at BMJ Open.

ABSTRACT

Objective

In March 2011, New Zealand (NZ) launched an aspirational goal to reduce smoking prevalence to 5% or less by 2025 (Smokefree 2025 goal). Little is known about university students' awareness of, support for, and perceptions about this goal. We sought to narrow the knowledge gap.

Setting

University students in NZ.

Methods

We analysed data from a 2018 cross-sectional survey of university students across NZ. Logistic regression analysis examined the associations between responses about the Smokefree goal with smoking and vaping, while controlling for age, sex and ethnicity. Confidence intervals (95% CI) were reported where appropriate.

Participants

The sample comprised 1,476 students: 919 (62.3%) aged 18 to 20, 557 (37.7%) aged 21 to 24 years; 569 (38.6%) male and 907 (61.4%) female; 117 (7.9%) Māori and 1359 (92.1%) non-Māori. Of these, 10.5% currently smoked (i.e. smoked at least monthly) and 6.1% currently vaped (i.e. used an e-cigarette or vaped at least once a month).

Results

Overall awareness of the Smokefree goal was 47.5% (95% CI: 44.9 to 50.1); support 96.9% (95% CI: 95.8 to 97.8); belief that it can be achieved 88.8% (95% CI: 86.8 to 90.7) and belief that e-cigarettes/vaping can help achieve it 88.1% (95% CI: 86.0 to 89.9).

Dual users of tobacco cigarettes and e-cigarettes had greater odds of being aware of the Smokefree goal (OR = 3.07, 95% CI: 1.19 to 7.92), current smokers had lower odds of supporting it (OR = 0.13, 95% CI: 0.06 to 0.27) and of believing that it can be achieved (OR = 0.15, 95% CI: 0.09 to 0.24) and current vapers had greater odds of believing that e-cigarettes/vaping can help to achieve it (OR = 8.57, 95% CI: 1.18 to 62.52) compared with non-users.

Conclusions

The results suggest strong overall support for the Smokefree goal and belief that it can be achieved and that e-cigarettes/vaping can help achieve it. Smoking and vaping were associated with high awareness of the Smokefree goal, but lower support and optimism that it can be achieved.

Strengths and limitations of this study

- This is the first study in New Zealand to assess the Smokefree 2025 goal: awareness, support, achievability and role of e-cigarettes/vaping, in university students.
- The sample was weighted by sex and university size to improve its representation of the general university student population.
- The main limitation of this study is that a convenience sample was used, which increases the risk of volunteer bias.

8.1.5 Associations of history of mental illness with smoking and vaping among university students aged 18–24 years in New Zealand: Results of a 2018 national cross-sectional survey.

This co-authored journal article (**Appendix 5**) was published in a peer-reviewed journal (Addictive Behaviors) in June 2020.[5] It describes the prevalence and patterns of smoking and vaping in students with and without history of mental illness (defined as having received a diagnosis of, or treatment for depression, anxiety or nervous disorder, or other mental health condition in the previous 12 months). It used data from the March-May 2018 survey and the full version of the paper is available at Addictive Behaviors.

ABSTRACT

Objective

Data on associations of history of mental illness (HMI) with smoking and vaping in New Zealand (NZ) are lacking. This study examines these associations in university students aged 18-24 years.

Methods

Data came from a 2018 national cross-sectional study of university students and included information on demographic characteristics, smoking, vaping and participant health in the previous 12-months.

χ^2 tests compared patterns of smoking and vaping, and logistic regression assessed associations of HMI with smoking and vaping, controlling for age, gender and ethnicity. An HMI was defined as a diagnosis/treatment for depression, anxiety/nervous disorder, or other mental health condition in the previous 12-months.

Results

The sample comprised 1293 students: 61.3% aged 18-20; 62.8% female; 7.8% Māori, 92.2% non-Māori, and 18.5% reported an HMI. Smoking: 49.7% (95% CI 47.0-52.5) ever, 10.5% (8.9-12.3) current and 5.0% (3.9-6.4) daily. Vaping: 38.7% (36.0-41.4) ever, 6.3% (5.1-7.8) current and 1.9% (1.3-2.8) daily.

Participants with HMI were significantly more likely to smoke: ever (64.9% vs 46.3%, p<.001), current (15.1% vs 9.5%, p=.011) and daily (7.5% vs 4.5%, p=.050), and vape: ever (49.4% vs 36.3%, p<.001) and current (9.2% vs 5.7%, p=.044) than participants without HMI.

The model containing all predictors of HMI was significant, χ^2 (5, N=1293) =24.09, p<.001. Gender (OR 0.54, (0.4-0.75)), current smoking (OR 1.82, (1.19-2.78)) and current vaping (OR 1.73, (1.02-2.93)) made unique significant contributions to the model.

Conclusions

The prevalence of smoking and vaping were significantly higher in students with HMI, and there were strong associations between HMI and smoking and vaping.

Keywords: Mental illness, smoking, vaping, university students, New Zealand.

8.2 Conference papers/abstracts

8.2.1 Associations of mental illness with smoking and vaping in university students in New Zealand.

This co-authored abstract was presented (online) at the 16th World Congress on Public Health 2020, held in Rome, Italy in October 2020.[6] It assesses patterns of smoking and vaping in students who reported and who did not report a history of mental illness. It used data from the March-May 2018 survey.

ABSTRACT

BACKGROUND People with mental illness have higher smoking prevalence, and vaping is generally higher among smokers than non-smokers. However, data on associations of mental illness with smoking and vaping in New Zealand (NZ) is lacking. This study examines associations of history of mental illness (HMI) with smoking and vaping in NZ university students.

METHODS Data came from a March 2018 national cross-sectional study. χ^2 tests compared patterns of smoking and vaping in students with and without HMI. An HMI was defined as a diagnosis, or treatment for depression, anxiety or nervous disorder, or other mental health condition in the previous 12 months. Logistic regression model assessed the association of an HMI with smoking and vaping.

RESULTS 1622 students were included: 82.7% aged <25 years, 17.3% ≥25 years; 38.6% male, 61.4% female; 7.8% Māori, 92.2% non-Māori; 18.1% reported an HMI. Of respondents, 50.5% (95% CI 48.0-53.0) reported ever, 10.0% (8.6-11.6) current and 5.0% (4.0-6.2) daily smoking. Students with HMI were significantly more likely to report ever (p<.001), current (p=.008) and daily smoking (p=.014) than those without HMI.

36.7% (34.3-39.1) of students reported ever, 6.7% (5.5-8.0) current and 2.5% (1.8-3.4) daily vaping. Students with HMI were significantly more likely to report ever (p<.001), current (p=.002) and daily vaping (p=.022) than those without HMI.

The full model containing all predictors was statistically significant, χ^2 (5, N = 1621) = 34.843, p < .001. Female gender: OR 0.55 (0.41-0.73); current smoking: OR 1.76 (1.19-2.60), and current vaping: OR 2.07 (1.32-3.25) were significantly associated with an HMI.

CONCLUSIONS There were strong associations between an HMI and smoking and vaping (controlling for age, gender, and ethnicity). These findings extend earlier work on the relationship between smoking and mental illness by demonstrating similar associations in university students, and generate new information on HMI and vaping.

MAIN MESSAGES

- Significant numbers of students may have an HMI.
- Students with an HMI have higher prevalence of smoking and vaping than students without an HMI.

Keywords: mental illness, HMI, smoking, vaping, university students, New Zealand.

8.2.2 Assessing Perceptions of University Students in NZ on Vaping, Cigarette Smoking, and the Smokefree Aotearoa 2025 Goal.

This co-authored abstract was presented at the 23rd World Conference on Health Promotion held in Rotorua, New Zealand in April 2019. It describes the overall, preliminary results of my thesis an unweighted sample of respondents who participated in the March-May 2018 survey.

ABSTRACT

Background/Objectives

Smoking kills about 5,000 people prematurely annually in New Zealand (NZ); costs society >$1.6 billion per year, and amplifies social inequalities, with Māori and Pacific people worst affected. NZ wants to reduce smoking to ≤5% of the population by 2025 (Smokefree Aotearoa 2025). Vaping (e-cigarette use) has potential to substitute for smoking and is rapidly expanding in NZ. However, little is known on smoking and vaping in university students or their perceptions of Smokefree Aotearoa 2025. This project examines these before and after policy change on nicotine e-cigarettes.

Methods

A baseline survey was conducted in March-May 2018 in all eight NZ universities, and a follow-up survey is planned for March-May 2019. SPSS was used for data analysis.

Results

2134 students (40% male, 58% female) were included in the analysis: 1150 (54%) had ever smoked and 266 (12.5%) currently smoked. Of current smokers: 44% smoked at least daily, 64% smoked 1-5 cigarettes/day, 66% smoked their first cigarette >60 minutes after waking, 89% never or almost never smoked in indoor spaces and 68% in outdoor spaces where smoking is banned, 69% planned to quit at some point and 40% had tried to quit in the last 12 months.

2101 answered questions on vaping and 41% had ever vaped. Of ever vapers, 19% vaped daily or almost daily, 75% never or almost never vaped in indoor spaces and 67% in outdoor spaces where smoking is banned, 52% vaped out of curiosity, 18% to quit smoking and 13% just enjoyed it; 29% vaped daily for a month or more, 84% used nicotine-containing products and

almost all used rechargeable e-cigarettes. 77% of respondents said e-cigarettes were much less or somewhat less harmful than tobacco.

Nearly half (49%) of respondents indicated they were aware of the Smokefree 2025 goal, 96% supported it, 87% thought it can be achieved, and 87% thought vaping can help achieve it.

Discussion

Our preliminary results suggest the Smokefree Aotearoa 2025 target of ≤5% might be achieved for university students. Many students were aware of vaping, had tried it and had positive perceptions about it, thus vaping might be warmly embraced in this population. There was also overwhelming support for Smokefree 2025, and great optimism on its achievability, despite many students being unaware of it before this survey. A follow-up survey will be conducted in March-May 2019.

Keywords: vaping, e-cigarettes, smoking, Smokefree Aotearoa 2025, university students

8.3 Manuscripts under peer review

The following manuscripts have been submitted to journals for publication and are undergoing peer review:

8.3.1 Cigarette smoking and e-cigarette use among university students in Queensland, Australia and New Zealand: results of two cross-sectional surveys.

This co-authored article (**Appendix 6**) is being reviewed by BMJ Open. It describes the prevalence of, and patterns of cigarette smoking and e-cigarette use and the perceptions of harmfulness of vaping compared to smoking among university students in Australia and New Zealand.

ABSTRACT

Objectives Examine the patterns of cigarette smoking and vaping, the perceived harm of e-cigarettes compared with tobacco cigarettes, and associations between smoking and vaping with student characteristics.

Design Cross-sectional studies.

Setting The University of Queensland (UQ), Australia and 8 New Zealand (NZ) universities.

Participants Students at UQ: 4957 (70.8% aged <25 years, 63.0% female) and NZ: 1854 (82.5% aged <25 years, 60.1% female).

Methods Chi-squared tests compared smoking by age and gender, and vaping by age, gender and smoking. Two-sided $p<.05$ was considered significant and 95% confidence intervals (CI) reported where appropriate. Multinomial logistic regression examined associations between smoking and vaping (current exclusive smoker, current exclusive vaper, dual user, and non-user) with age, gender and student type (domestic vs international).

Results Smoking (UQ vs NZ, 95% CI): ever 45.2% (43.8-46.6) vs 50.0% (47.7-52.3), current 8.9% (8.1-9.7) vs 10.4% (9.1-11.9) and daily 5.2% (4.6-5.8) vs 5.6% (4.6-6.7), and not smoking in indoor 98.3% vs 87.7% or outdoor smoke-free spaces 83.8% vs 65.3%.

Vaping (UQ vs NZ, 95% CI): ever 20.9% (19.8-22.1) vs 37.6% (35.4-39.9), current 1.8% (1.5-2.2) vs 6.5% (5.4-7.7), and daily 0.7% (0.5-1.0) vs 2.5% (1.9-3.4), and not vaping in indoor 91.4% vs 79.6% or outdoor smoke-free spaces 84.4% vs 71.3%. Of respondents, 71.7% (70.3-73.2) vs 75.3% (72.9-77.6) perceived e-cigarettes as less harmful than tobacco cigarettes.

Males were more likely than females to smoke and vape, and believe that e-cigarettes are less harmful. Regression models containing all predictors for smoking and vaping were significant and the effect of gender was significant for dual user, current exclusive smoker and current exclusive vaper (all $p<0.01$). Females had lower odds for smoking, vaping or dual use.

Conclusions

Results suggest significant differences in smoking and vaping patterns of university students in Australia and NZ, and a strong influence of gender on smoking and vaping.

Strengths and limitations of this study

- This is the first study to examine cigarette smoking and e-cigarette use patterns in university students in Australia and New Zealand.
- The study consisted of samples that were reasonably similar to students at source populations (New Zealand and University of Queensland) making our findings potentially generalizable to the wider New Zealand and University of Queensland university student populations.
- The main limitation of this study is that participants were not randomly selected, exposing our samples to volunteer bias that could lead to over- or underestimation of prevalence estimates.

8.3.2 Support for a tobacco endgame strategy in Australia and New Zealand: results from cross-sectional surveys among university students.

This co-authored article (**Appendix 7**) is being reviewed by *Addiction*. It describes the prevalence of, and factors associated with support for two tobacco endgame strategies (reducing tobacco retail availability and ending the legal sale of cigarettes in Australia and New Zealand "in 10 years."

ABSTRACT

Background and Aims There is growing public interest for strategies to reduce tobacco use to near-zero (endgame strategies). This study assessed the prevalence of, and factors associated with, university students in New Zealand (NZ) and Australia's support for reducing tobacco retail availability and ending the legal sale of cigarettes within the next 10 years.

Design Cross-sectional studies.

Setting Universities in Australia and NZ.

Participants A total of 5172 Australian (68.5% aged <25 years, 60.4% female) and 1932 NZ students (82.1% aged <25 years, 56.8% female) were included.

Measures Support for reducing the number of places allowed to sell cigarettes/tobacco, and ending the sale of cigarettes in 10 years, in NZ or Australia. Logistic regression was used to model the associations between support for the two endgame strategies and student characteristics: age, sex, student type (domestic vs other), and smoking and vaping status (current smoking, current vaping, dual use and non-use).

Findings Support for the first strategy (reducing the number of cigarette retailers) was higher among NZ than Australian students (68.2% vs 62.3%) and for the second (ending cigarette sales) was similar (52.7% vs 51.6%).

Support for these strategies was higher in younger than older students, females than males and students who do not smoke or vape than those who do, and in domestic than non-domestic students (second strategy). Support, including among students who smoke or vape, was generally higher in NZ than Australia.

All regression models were significant and males, people who smoke, vape or use both products had lower odds for supporting these strategies compared with females and those who do not smoke or vape.

Conclusions The results suggest a substantial proportion of students support endgame strategies in Australia and NZ. Female sex and non-use of tobacco and e-cigarettes were associated with stronger support for a tobacco endgame.

Keywords: tobacco endgame, smoking, vaping, university students.

8.3.3 Attitudes of University Students towards vaping in public, and smoke-free spaces, in Australia and New Zealand: results from cross-sectional surveys.

This co-authored article (**Appendix 8**) is being reviewed by *Preventive Medicine*. It describes the prevalence of, and factors associated with agreement and disagreement with three statements about vaping in public spaces and in smoke-free spaces among Australian and New Zealand students.

ABSTRACT

This study assessed the prevalence of, and factors associated with agreement and disagreement with e-cigarette use (vaping) in public, and smoke-free spaces among Australian and New Zealand (NZ) university students. Cross-sectional studies were conducted in 2017 (Australia) and 2018 (NZ) and included 5172 Australian (68.5% aged <25 years, 60.4% female) and 1932 NZ students (82.1% aged <25 years, 56.8% female).

We asked participants their level of agreement or disagreement with three statements (1) vaping around me causes me harm; (2) vaping should be allowed in indoor smoke-free spaces, and (3) vaping should be allowed in outdoor smoke-free spaces. Responses were categorised into agree (agree/strongly agree), neutral, or disagree (disagree/strongly disagree). We compared the proportions of agreement (statement 1) and disagreement (statements 2, 3) by smoking and vaping status (current smoking, current vaping, dual use, non-use). Multinomial logistic regression predicted responses to the statements, with participant characteristics.

More Australian than NZ students agreed with the first statement (52.5% vs 37.3%), and did not agree with the second statement (83.7% vs 76.5%) or third statement (61.0% vs 55.8%). Females had higher odds of agreeing with the first statement, but lower odds for agreeing with the second or third statements, while the reverse was true for all respondents who smoked or vaped.

Conclusions

The findings suggest a substantial proportion of university students do not support vaping in public, or in smoke-free spaces. Sex and current smoking/vaping status were strong predictors of supporting vaping in smoke-free spaces.

Highlights

- This is the first study to report on the prevalence and factors associated with support (or otherwise) for vaping in smoke-free spaces in Australia and New Zealand, and beyond.
- Majority of students in both countries did not support vaping in smoke-free spaces.
- Support for e-cigarette use in public, or in smoke-free spaces was associated with age and smoking and vaping status of participants.

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Concluding statement

I hope that the results of this study will stimulate further discussion around the role vaping and tobacco endgame strategies can play in promoting smoking cessation, and moving New Zealand closer to a smokefree future.

APPENDICES

Appendix 1. Cigarette smoking among university students aged 18-24 years in New Zealand: results of the first (baseline) of two national survey.

Open access Original research

BMJ Open

Cigarette smoking among university students aged 18–24 years in New Zealand: results of the first (baseline) of two national surveys

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ABSTRACT

Objectives Although the smoking prevalence continues to decline in New Zealand (NZ) overall, little is known about smoking in university students. A 2013 survey of students aged 17–25 years found that 14% were current smokers, and 3% daily smokers. However, the sample did not include students from all NZ universities. This study examines the prevalence and patterns of cigarette smoking among students aged 18–24 years.

Setting University students across NZ.

Methods Data came from a March to May 2018 survey of students from all NZ universities, and were weighted to account for undersampling and oversampling, based on gender and university size. χ^2 tests were used to compare smoking by age, gender and ethnicity.

Participants 1476 participants were included: 919 (62.3%) aged 18–20 years and 557 (37.7%) aged 21–24 years; 569 (38.6%) male and 907 (61.4%) female; and 117 (7.9%) Māori and 1359 (92.1%) non-Māori.

Results 49.8% (95% CI 47.2 to 52.4) of respondents reported ever smoking, 11.1% (95% CI 9.5 to 12.9) currently smoked (smoked at least once a month) and 5.9% (95% CI 4.8 to 7.3) smoked at least daily (daily smokers). Of current smokers, 63.6% smoked 1–5 cigarettes/day, 45.8% smoked daily, 73.4% smoked first cigarette >60 min after waking, 86.0% never/almost never smoked in indoor and 64.6% in outdoor smokefree spaces, 69.9% planned to quit and 32.4% had tried to quit. Ever, current and daily smoking were significantly higher in 21–24 compared with 18–20 years olds, and in males compared with females. Older participants were more likely to report smoking more cigarettes/day. Māori were more likely to report ever smoking than non-Māori.

Conclusions Current smoking among NZ university students aged 18–24 years appears to be declining but daily smoking could be increasing. However, many students appeared less addicted to nicotine, and willing to quit. We recommend increasing the availability of smokefree services for students who wish to quit.

Strengths and limitations of this study

- ► This is the first study in NZ to examine the prevalence of cigarette smoking, and patterns of smoking in a sample of university students across the country.
- ► The sample was weighted by gender and university size to improve its representation of the general NZ university student population.
- ► The main limitation of this study is that sampling was not random.

INTRODUCTION

Tobacco continues to be a leading cause of preventable morbidity and mortality in Aotearoa New Zealand (New Zealand or NZ), with an estimated 5000 deaths each year linked to smoking.[1] Smoking is a major contributor to health inequalities in NZ, with mortality rates among Māori, the Indigenous population of NZ, roughly two times those of non-Māori non-Pacific people (mainly NZ European).[2] Monitoring smoking behaviours is vital to inform tobacco control policies to reduce preventable deaths and morbidity, and to reduce inequalities.

In March 2011, the NZ government adopted the Smokefree Aotearoa 2025 goal (Smokefree 2025 or Smokefree goal) for NZ, in response to the recommendations of a landmark parliamentary inquiry by the Māori Affairs Select Committee into the tobacco industry in Aotearoa and the consequences of tobacco use for Māori.[3] The goal aspires to reduce the prevalence of smoking and tobacco availability to minimal levels (5% or less) by the year 2025.[3] The government has maintained a 10% tax increase (above inflation) on tobacco products (effected on 1st January) annually since 2010,[4] among other measures to reduce smoking.[5]

Despite an overall decline in the prevalence of smoking, with current smoking reducing from 18.2% in 2011/2012 to 14.9% in 2017/2018 and daily smoking from 16.3% to 13.1% in the same period,[6] the prevalence remains high in people aged 18–24 years

Appendix 2. Change in smoking intentions of university students in New Zealand following simulated cigarette price increases: results of the first of two cross-sectional surveys.

Change in smoking intentions of university students in New Zealand following simulated cigarette price increases: results of the first of two cross-sectional surveys

Ben Wamamili

ABSTRACT

AIM: Increasing cigarette prices is one of the most effective strategies to reduce smoking. This study examined changes in smoking intentions of university students following simulated price increases.

METHOD: Data came from a 2018 cross-sectional survey of university students. The sample comprised 187 current smokers (47% aged <21 years, 53% ≥21 years; 60% male, 40% female; 10% Māori, 90% non-Māori and 18% current vapers). Students were asked how their smoking behaviour would change if the price of a packet of their regular cigarettes or RYO tobacco was increased by $5.00, $10.00, $15.00 or >$15.00.

RESULTS: The proportion of students who would smoke the same amount declined substantially, while students who would switch to e-cigarettes increased by large margins at price increases of $5.00, $10.00 and $15.00. Quit intentions increased at all price levels, but were stronger among younger students and females. Males were almost twice as likely to switch to e-cigarettes as females. Overall, more students would quit than switch to e-cigarettes.

CONCLUSION: Results show that increasing cigarette prices by ≥$15.00 per packet could lead to significant reductions in smoking among university students. Follow-up data is required to assess the differential effects of price increases on vaping.

Smoking remains one of the leading causes of preventable death and illness in New Zealand[1] and elsewhere. Each year about 5,000 people in New Zealand die because of smoking or second-hand smoke exposure.[1] Further, smoking is also a major contributor to mortality differences between Māori and non-Māori non-Pacific people (New Zealand European), with Māori having disproportionately high mortality rates compared with non-Māori.[2]

Data from the New Zealand Health Survey show that in 2018/2019, 14.2% of adults aged 15 years or older were current smokers (ie, smoked at least once a month) and the smoking prevalence was highest among Māori compared with non-Māori (Māori 34%, Pasifika 24.4%, New Zealand European/Other 12.4%, Asian 8.4%).[3] The smoking prevalence of young adults aged 18–24 years was 19.2% in the general population[3] and 11.1% among university students.[4]

Appendix 3. Electronic cigarette use among university students aged 18–24 years in New Zealand: results of a 2018 national cross-sectional survey.

Open access Original research

BMJ Open

Electronic cigarette use among university students aged 18–24 years in New Zealand: results of a 2018 national cross-sectional survey

Ben Wamamili ,[1] Mark Wallace-Bell,[1] Ann Richardson,[1] Randolph C Grace,[2] Pat Coope[3]

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ABSTRACT

Objectives To examine electronic cigarette use, reasons for use and perceptions of harm among university students.

Design Cross-sectional study.

Setting University students across New Zealand.

Methods We analysed data from a 2018 cross-sectional survey of university students, weighted to account for undersampling and oversampling by gender and university size. χ^2 tests were used to compare e-cigarette use, reasons for use and perceptions of harm by age, gender, ethnicity and cigarette smoking.

Participants The sample comprised 1476 students: 62.3% aged 18–20 years, 37.7% aged 21–24 years; 38.6% male, 61.4% female; 7.9% Māori and 92.1% non-Māori.

Results 40.5% of respondents (95% CI 37.9 to 43.1) reported ever, 6.1% (4.9–7.4) current and 1.7% (1.1–2.5) daily use. Regardless of frequency, 11.5% of vapers had vaped daily for ≥1 month, 70.2% of whom used nicotine-containing devices; 80.8% reported not vaping in indoor and 73.8% in outdoor smoke-free spaces. Among ever vapers, curiosity (67.4%), enjoyment (14.4%) and quitting (2.4%) were common reasons for vaping. 76.1% (73.4–78.7) of respondents believed e-cigarettes were less harmful than cigarettes.

More males than females reported vaping (ever, current, daily and daily for ≥1 month), nicotine use and belief that e-cigarettes were less harmful than cigarettes. More participants aged 18–20 years reported not vaping in outdoor smoke-free spaces, vaping out of curiosity and belief that e-cigarettes were less harmful than cigarettes, while more participants aged 21–24 years vaped daily for ≥1 month and for enjoyment. More Māori than non-Māori ever vaped. More cigarette smokers than non-smokers vaped (ever, current, daily and daily for ≥1 month), used nicotine and vaped to quit, while more non-smokers did not vape in smoke-free spaces and vaped out of curiosity.

Conclusions Our results suggest high prevalence of e-cigarette ever and current use, particularly among males and smokers. Many vaped out of curiosity and perceived e-cigarettes as less harmful than cigarettes.

Strengths and limitations of this study

- ► This is the first study in New Zealand to examine e-cigarette use in university students.
- ► Data were weighted to improve representation of the New Zealand university population.
- ► The main limitation of this study is that sampling was not random and our convenience sample is susceptible to volunteer bias, which could lead to underestimation or overestimation of prevalence estimates.

INTRODUCTION

Electronic cigarette or e-cigarette use (vaping) has become increasingly popular in in recent years,[1–14] particularly among youth and smokers. However, the role of vaping in tobacco control remains controversial. Proponents argue that vaping could potentially help smokers cut down or quit altogether and reduce the public health burden from smoking,[8 12 15–21] while opponents argue that it might undermine current tobacco control policies and create new nicotine addicts who could potentially transition to smoking.[15 17 18 20] In the background of this debate, vaping continues to expand globally and in New Zealand (NZ). A 2013 study reported that 23% of adult smokers and 39% of recent quitters in NZ ever vaped;[22] in 2014, 13.1% of NZ adults aged 15 years or older reported ever vaping and 0.8% were current vapers,[23] and a recent systematic review noted that ever e-cigarette use among adults and adolescents had increased in NZ, but current use remained low.[24]

A number of studies have reported vaping among adults aged 18–24 years. In a study that examined the differences in vaping between college and non-college participants aged 18–24 years, Buu and colleagues reported that 15.36% of non-college and 9.61% of

Appendix 4. Attitudes towards the New Zealand Government's Smokefree 2025 goal associated with smoking and vaping in university students aged 18 to 24 years: results of a 2018 national cross-sectional survey.

Open access Original research

BMJ Open

Attitudes towards the New Zealand Government's Smokefree 2025 goal associated with smoking and vaping in university students aged 18 to 24 years: results of a 2018 national cross-sectional survey

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ABSTRACT

Objective In March 2011, New Zealand (NZ) launched an aspirational goal to reduce smoking prevalence to 5% or less by 2025 (Smokefree 2025 goal). Little is known about university students' awareness of, support for and perceptions about this goal. We sought to narrow the knowledge gap.

Setting University students in NZ.

Methods We analysed data from a 2018 cross-sectional survey of university students across NZ. Logistic regression analysis examined the associations between responses about the Smokefree goal with smoking and vaping, while controlling for age, sex and ethnicity. Confidence intervals (95% CI) were reported where appropriate.

Participants The sample comprised 1476 students: 919 (62.3%) aged 18 to 20 and 557 (37.7%) aged 21 to 24 years; 569 (38.6%) male and 907 (61.4%) female; 117 (7.9%) Māori and 1359 (92.1%) non-Māori. Of these, 10.5% currently smoked (ie, smoked at least monthly) and 6.1% currently vaped (ie, used an e-cigarette or vaped at least once a month).

Results Overall awareness of the Smokefree goal was 47.5% (95% CI: 44.9 to 50.1); support 96.9% (95% CI: 95.8 to 97.8); belief that it can be achieved 88.8% (95% CI: 86.8 to 90.7) and belief that e-cigarettes/vaping can help achieve it 88.1% (95% CI: 86.0 to 89.9).
Dual users of tobacco cigarettes and e-cigarettes had greater odds of being aware of the Smokefree goal (OR=3.07, 95% CI: 1.19 to 7.92), current smokers had lower odds of supporting it (OR=0.13, 95% CI: 0.06 to 0.27) and of believing that it can be achieved (OR=0.15, 95% CI: 0.09 to 0.24) and current vapers had greater odds of believing that e-cigarettes/vaping can help to achieve it (OR=8.57, 95% CI: 1.18 to 62.52) compared with non-users.

Conclusions The results suggest strong overall support for the Smokefree goal and belief that it can be achieved and that e-cigarettes/vaping can help achieve it. Smoking and vaping were associated with high awareness of the Smokefree goal, but lower support and optimism that it can be achieved.

Strengths and limitations of this study

- ► This is the first study in New Zealand to assess the Smokefree 2025 goal: awareness, support, achievability and role of e-cigarettes/vaping, in university students.
- ► The sample was weighted by sex and university size to improve its representation of the general university student population.
- ► The main limitation of this study is that a convenience sample was used, which increases the risk of volunteer bias.

INTRODUCTION

Smoking is a leading cause of preventable death and illness in New Zealand (Aotearoa New Zealand or NZ) and causes an estimated 5000 deaths annually.[1] Smoking also plays a major role in the inequalities in health and well-being between Māori and non-Māori.[2] Furthermore, the economic consequences of smoking are significant[3] and have a huge impact on society, particularly on the poor. For these reasons, tobacco control has been a major social and health policy in NZ.

The overall prevalence of current smoking (ie, smoking at least once a month) in adults aged 15 years or older in NZ is estimated at 14.2%.[4] Māori (the Indigenous people of NZ) have the highest prevalence of smoking at 34% (Pasifika peoples 24.4%, NZ European/Other 12.4% and Asian 8.4%).[4] People aged 35 to 44 (19.8%), 18 to 24 (19.2%) and 25 to 34 (18.3%) have among the highest prevalences of smoking in NZ, with the lowest prevalence in people aged 15 to 17 years (3.8%).[4] A recent study using 2018 data from a representative sample of students from all

Appendix 5. Associations of history of mental illness with smoking and vaping among university students aged 18-24 years in New Zealand: Results of a 2018 national cross-sectional survey.

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Associations of history of mental illness with smoking and vaping among university students aged 18–24 years in New Zealand: Results of a 2018 national cross-sectional survey

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HIGHLIGHTS

- This is the first study to report on the associations of HMI with smoking and vaping in NZ.
- Significant numbers of students may have an HMI.
- Students with an HMI have higher prevalence of smoking and vaping than students without an HMI.
- Smokers with an HMI may be vaping to quit smoking or as a substitute for smoking.

ARTICLE INFO

Keywords:
Mental illness
Smoking
Vaping
University students
New Zealand

ABSTRACT

Objective: Data on associations of history of mental illness (HMI) with smoking and vaping in New Zealand (NZ) are lacking. This study examines these associations in university students aged 18–24 years.

Methods: Data came from a 2018 national cross-sectional study of university students and included information on demographic characteristics, smoking, vaping and participant health in the previous 12-months.

χ^2 tests compared patterns of smoking and vaping, and logistic regression assessed associations of HMI with smoking and vaping, controlling for age, gender and ethnicity. An HMI was defined as a diagnosis/treatment for depression, anxiety/nervous disorder, or other mental health condition in the previous 12-months.

Results: The sample comprised 1293 students: 61.3% aged 18–20; 62.8% female; 7.8% Māori, 92.2% non-Māori, and 18.5% reported an HMI. Smoking: 49.7% (95% CI 47.0–52.5) reported ever, 10.5% (8.9–12.3) current and 5.0% (3.9–6.4) daily smoking. Vaping: 38.7% (36.0–41.4) reported ever, 6.3% (5.1–7.8) current and 1.9% (1.3–2.8) daily vaping.

Participants with HMI were significantly more likely to smoke: ever (64.9% vs 46.3%, $p < .001$), current (15.1% vs 9.5%, $p = .011$) and daily (7.5% vs 4.5%, $p = .050$), and vape: ever (49.4% vs 36.3%, $p < .001$) and current (9.2% vs 5.7%, $p = .044$) than participants without HMI.

The model containing all predictors of HMI was significant, χ^2 (5, N = 1293) = 24.09, $p < .001$. Gender (OR 0.54, (0.4–0.75)), current smoking (OR 1.82, (1.19–2.78)) and current vaping (OR 1.73, (1.02–2.93)) made unique significant contributions to the model.

Conclusions: The prevalence of smoking and vaping were significantly higher in students with HMI, and there were strong associations between HMI and smoking and vaping.

1. Introduction

Smoking remains one of the leading causes of preventable disease and death in New Zealand (NZ) (Ministry of Health, 2019) and globally (GBD 2015 Tobacco Collaborators, 2017; World Health Organization, 2012). Thus, efforts to reduce the prevalence of smoking continue to be

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Appendix 6. Cigarette smoking and e-cigarette use among university students in Queensland, Australia and New Zealand: results of two cross-sectional surveys.

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Cigarette smoking and e-cigarette use among university students in Queensland, Australia and New Zealand: results of two cross-sectional surveys.

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2020-041705.R2
Article Type:	Original research
Date Submitted by the Author:	n/a
Complete List of Authors:	Wamamili, Ben; University of Canterbury, School of Health Sciences lawler, Sheleigh; The University of Queensland, School of Public Health Wallace-Bell, Mark; University of Canterbury, Health Sciences Gartner, Coral; The University of Queensland, School of Public Health Sellers, David; James Cook University, College of Public Health, Medical and Veterinary Sciences Grace, Randolph; University of Canterbury, Health Sciences Courtney, Ryan; University of New South Wales, NDARC Coope, Pat; University of Canterbury, Health Sciences
Primary Subject Heading:	Epidemiology
Secondary Subject Heading:	Public health, Smoking and tobacco, Epidemiology
Keywords:	EPIDEMIOLOGY, PUBLIC HEALTH, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

Appendix 7. Cigarette smoking and e-cigarette use among university students in Queensland, Australia and New Zealand: results of two cross-sectional surveys.

Addiction

Support for a tobacco endgame strategy in Australia and New Zealand: results from cross-sectional surveys among university students.

Journal:	*Addiction*
Manuscript ID	Draft
Manuscript Type:	Research Report
Date Submitted by the Author:	n/a
Complete List of Authors:	Wamamili, Ben; University of Canterbury, School of Health Sciences Gartner, Coral; The University of Queensland, Faculty of Medicine, School of Public Health Lawler, Sheleigh; The University of Queensland, School of Public Health Wallace-Bell, Mark; University of Canterbury, School of Health Sciences Grace, Randolph; University of Canterbury, School of Psychology, Speech and Hearing Coope, Pat; University of Canterbury, College of Education, Health and Human Development Courtney, Ryan; University of New South Wales, National Drug & Alcohol Research Centre Sellars, David; James Cook University
SUBSTANCE:	tobacco
METHOD:	surveys
FIELD OF STUDY:	epidemiology
Keywords:	tobacco endgame, smoking, vaping, university students

Appendix 8. Attitudes of University Students towards vaping in public, and smoke-free spaces, in Australia and New Zealand: results from cross-sectional surveys.

Preventive Medicine

Attitudes of University Students towards vaping in public, and smoke-free spaces, in Australia and New Zealand: results from cross-sectional surveys.

--Manuscript Draft--

Manuscript Number:	
Article Type:	Research paper
Keywords:	e-cigarettes; vaping; smoking; smoke-free; university students
Corresponding Author:	Ben Wamamili, M.D., MPH University of Canterbury Christchurch, NEW ZEALAND
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	David Sellars
	Ryan Courtney, PhD
Abstract:	This study assessed the prevalence of, and factors associated with agreement and disagreement with e-cigarette use (vaping) in public, and smoke-free spaces among Australian and New Zealand (NZ) university students. Cross-sectional studies were conducted in 2017 (Australia) and 2018 (NZ) and included 5172 Australian (68.5% aged <25 years, 60.4% female) and 1932 NZ students (82.1% aged <25 years, 56.8% female).
Suggested Reviewers:	
Opposed Reviewers:	

Appendix 9. The questionnaire – New Zealand component, paper version.

Perceptions of university students on vaping, cigarette smoking, and the Smokefree 2025 Goal.

Please read this information and provide consent before proceeding.

Photo: 123rf

This survey is assessing the prevalence of e-cigarette use (vaping) and cigarette smoking among university students in NZ and their perceptions on vaping and its potential impact on the Government's Smokefree 2025 Goal (i.e. to have less than 5% of people aged 15years or older smoking by 2025). The project is being undertaken by Ben Wamamili, a PhD student at the University of Canterbury (UC) School of Health Sciences.

The survey will take about 10 minutes and your responses are confidential. You do not have to answer every question, but it is helpful to provide as much information as you can. Participation is voluntary and you can withdraw at any stage. You may ask for your raw data to be returned to you if you provide contact details (optional). However, once data analysis starts (01 June 2018), it will not be possible to remove your data from our system.

Results of this study may be published, but your confidentiality is assured. Data will be stored securely in a pass-word protected university computer system only accessible to the research team and results will not contain information that could identify you as an individual or groups of people. The resulting thesis is a public document and will be available through UC Library.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee (HEC Number: 2017/42/LR-PS), and participants can address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Do you agree to take part in this survey?

☐ Yes ***(please proceed to Q1 below or scan the QR code and complete the survey online)***

☐ No ***(please do not proceed)***

Completion of this survey gives you a chance to enter a draw to win one of ten $100 cash prizes.

SECTION 1: DEMOGRAPHIC INFORMATION

Q1 How old are you?

☐ 17 years or younger ☐ 18-20 years ☐ 21-24 years ☐ 25-29 years
☐ 30-34 years ☐ 35-39 years ☐ 40-44 years ☐ 45 years or older

Q2 What is your gender?

☐ Male ☐ Female ☐ Other ☐ Prefer not to say

Q3 Which ethnic group or groups do you belong to? PLEASE SELECT ALL THAT APPLY

☐ New Zealand European ☐ Māori ☐ Samoan
☐ Cook Island Māori ☐ Tongan ☐ Niuean
☐ Chinese ☐ Indian ☐ Other

Q4 In which country were you born?

☐ New Zealand ☐ Australia ☐ Other

Q5 How many years have you lived in New Zealand?

☐ Less than 1 year ☐ 1-5 years ☐ 6-10 years ☐ More than 10 years

Q6 Where are you currently studying (full-time, part-time or through distance learning)? PLEASE SELECT ALL THAT APPLY

□ AUT	□ University of Auckland	□ University of Waikato
□ Lincoln University	□ University of Canterbury	□ Victoria University of Wellington
□ Massey University	□ University of Otago	□ Other (*please state*)_____

SECTION 2: TOBACCO USE

Q7 Have you ever smoked cigarettes or tobacco at all, even just a few puffs?

□ Yes □ No (***please go to Q17***)

Q8 Do you currently smoke cigarettes or tobacco? This includes roll-your-own (RYO).

□ Yes □ No (***please go to Q17***)

Q9 Which of the following best describes how often you smoke cigarettes or tobacco now?

□ At least once a day □ At least once a month
□ At least once a week □ Less often than once a month

Q10 During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?

□ 1 to 5 □ 11 to 20 □ 31 or more
□ 6 to 10 □ 21 to 30 □ Don't know

Q11 How soon after waking do you smoke your first cigarette?

□ Within 5 minutes □ 31-60 minutes
□ 5-30 minutes □ >60 minutes

Q12 How often do you smoke in the following settings...?

	Never	Almost never	Sometimes	Fairly often	Very often
In indoor spaces where smoking is banned	□	□	□	□	□
In outdoor spaces where smoking is banned	□	□	□	□	□

Q13 Are you planning on giving up smoking?

□ Yes, within 30 days □ Yes, but not within the next 3 months
□ Yes, after 30 days but within 3 months □ No, I am not planning on giving up

Q14 Have you tried to quit smoking at any time in the last 12 months?

□ Yes □ No (***please go to Q16***)

Q15 In the last 12 months, how many serious attempts to stop smoking did you make that lasted 24 hours or longer? Please include any attempts that you are currently making.

□ 1-3 □ 4-5 □ More than 5

Q16 How would your smoking change (if at all) if the price of a packet of your regular cigarettes or RYO tobacco was increased by the amounts shown below...?

	I would smoke the same amount that I smoke today	I would smoke less than I smoke today	I would switch to other tobacco products	I would switch to electronic cigarette (e-cigarette)	I would stop smoking altogether	Don't know
$5.00	□	□	□	□	□	□
$10.00	□	□	□	□	□	□
$15.00	□	□	□	□	□	□
>$15.00	□	□	□	□	□	□

Q17 For each of the following statements, please indicate how you agree or disagree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Being smokefree is part of the New Zealand way of life	□	□	□	□	□
The number of places allowed to sell cigarettes and tobacco should be reduced	□	□	□	□	□
Cigarettes should no longer be sold in New Zealand in 10 years	□	□	□	□	□

SECTION 3: ELECTRONIC CIGARETTES

Electronic cigarettes, sometimes referred to as e-cigarettes, personal vaporisers or vaping devices are battery-operated devices that sometimes look like a cigarette or a fountain pen. They do not contain tobacco, but they release a mist that people inhale from the mouthpiece.

Q18 Have you ever tried an e-cigarette or vaping device?

- ☐ Yes
- ☐ No (***please go to Q25***)

Q19 How often do you currently use an e-cigarette or vaping device?

- ☐ Daily or almost daily
- ☐ Less than daily, but at least once a week
- ☐ Less than weekly, but at least once a month
- ☐ Less than monthly
- ☐ Not at all (***please go to Q25***)
- ☐ Don't know

Q20 How often do you vape/use an e-cigarette in the following settings...?

	Never	Almost never	Sometimes	Fairly often	Very often
In indoor spaces where smoking is banned	☐	☐	☐	☐	☐
In outdoor spaces where smoking is banned	☐	☐	☐	☐	☐

Q21 What is (was) your primary reason for using an e-cigarette or vaping device?

- ☐ To quit smoking
- ☐ To use when I cannot or am not allowed to smoke
- ☐ To save money compared to purchasing cigarettes
- ☐ Curiosity/just wanted to try them
- ☐ Don't know
- ☐ To cut down on smoking
- ☐ To avoid returning to smoking
- ☐ Because I enjoy(ed) it
- ☐ Some other reason

Q22 Have you used an e-cigarette or vaping device daily for a month or more?

- ☐ Yes
- ☐ No

Q23 Does the e-cigarette or vaping device that you use(d) most often contain(ed) nicotine?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q24 What e-cigarette or vaping device (do/did) you use (the most)?

- ☐ A disposable e-cigarette or vaping device (non-rechargeable)
- ☐ An e-cigarette or vaping device that uses replaceable prefilled cartridges (rechargeable)
- ☐ An e-cigarette or vaping device with a tank that you refill with liquids (rechargeable)
- ☐ A modular system that you refill with liquids (you use your own combination of separate devices: batteries, atomisers, etc.) (rechargeable)
- ☐ Don't know

Q25 Compared with tobacco cigarettes, how harmful are e-cigarettes to a person's health?

- ☐ Much less harmful than cigarettes
- ☐ Somewhat less harmful than cigarettes
- ☐ About the same as cigarettes
- ☐ Somewhat more harmful than cigarettes
- ☐ Much more harmful than cigarettes
- ☐ Don't know

Q26 For each of the following statements, please indicate how much you agree or disagree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
If someone vapes around me they are causing me harm because of second-hand vapour	☐	☐	☐	☐	☐
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed	☐	☐	☐	☐	☐
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed	☐	☐	☐	☐	☐

SECTION 4: SMOKEFREE 2025 GOAL

The New Zealand Government wants to reduce the proportion of people who smoke from around 16% (1 in 6) currently to less than 5% (1 in 20) by 2025. This is the Smokefree 2025 Goal.

Q27 Before today, were you aware of this goal?

- ☐ Yes
- ☐ No

Q28 Please select one response for each question on Smokefree 2025 Goal below.

	Definitely yes	Somewhat yes	Not really	Definitely not	No opinion
Do you support this goal?	□	□	□	□	□
Do you think this goal can be achieved?	□	□	□	□	□
Do you think e-cigarettes/vaping can help achieve this goal?	□	□	□	□	□

SECTION 5: GENERAL QUESTIONS

Q29 The following questions ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate HOW OFTEN you felt or thought a certain way.

	Never	Almost never	Sometimes	Fairly often	Very often
In the last month, how often have you felt that you were unable to control the important things in your life?	□	□	□	□	□
In the last month, how often have you felt confident about your ability to handle your personal problems?	□	□	□	□	□
In the last month, how often have you felt that things were going your way?	□	□	□	□	□
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	□	□	□	□	□

Q30 Have you been diagnosed with or received treatment for any of the following medical conditions in the last 12 months? PLEASE SELECT ALL THAT APPLY.

- □ Depression
- □ Anxiety or nervous disorder
- □ Other mental health condition
- □ Cardiovascular disease (e.g. heart disease, high blood pressure)
- □ None of the above
- □ Diabetes
- □ Cancer, other than skin cancer
- □ Asthma
- □ Other chronic respiratory disease (e.g. chronic obstructive pulmonary disease)

SECTION 6: FOLLOW-UP

Q31 Would you like to be entered into a draw to win one of ten $100 cash prizes?

- □ Yes (***please provide contact details at the end of this survey***)
- □ No

Q32 Would you like to receive a copy of the results of this survey?

- □ Yes (***please provide contact details at the end of this survey***)
- □ No

Q33 Would you like to receive information about future research on this topic?

- □ Yes (***please provide contact details below***)
- □ No

Please write your first name and phone number or email address below to help us contact you.

First name:_____ Phone/E-mail:_____

Thank you for taking time to complete this survey. Please feel free to ask your friend(s) studying at any New Zealand university to participate as well.

Appendix 10. The questionnaire – New Zealand component, online version.

Perceptions of university students on vaping, cigarette smoking, and the Smokefree 2025 Goal

Start of Block: Default Question Block

Please read the following information and provide your consent before completing this survey.

INFORMATION FOR PARTICIPANTS

Photo: 123rf

This survey aims to assess the prevalence of e-cigarette use (vaping) and cigarette smoking among university students in New Zealand (NZ) and perceptions of students on vaping and its potential impact on the NZ Government's Smokefree 2025 Goal (i.e. less than 5% of the adult population or 1 in 20 adults to be smoking by 2025). The project is being undertaken by Ben Wamamili, a PhD student in the School of Health Sciences, University of Canterbury (UC).

The survey will take about 10 minutes to complete and your responses are confidential. You do not have to answer every question, but it would be helpful to provide as much information as you can. There are no right or wrong answers.

Participation is voluntary (your choice) and you can withdraw at any stage of this survey. You may ask for your raw data to be returned to you if you provided contact details (optional) at the time of the survey. However, once data analysis starts (01 June 2018), it will not be possible to remove your data from our system since any contact details you may provide will not be included in the analyses.

Results of this study may be published, but your confidentiality is assured. Data will be stored securely in a pass-word protected university computer system only accessible to the research team and results will not contain information that could identify you as an individual or groups of people. The resulting thesis is a public document and will be available through UC Library.

The project is being carried out by Ben Wamamili (PhD student) under supervision of Dr Mark Wallace-Bell (senior supervisor), Prof Ann Richardson, Prof Randolph Grace and Dr Murray Laugesen. Ben and Mark can be contacted at ben.wamamili@pg.canterbury.ac.nz and mark.wallace-bell@canterbury.ac.nz, respectively.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee (HEC Number: 2017/42/LR-PS), and participants can address any complaints to The

Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in this study, please click the next button to indicate you consent to participate then proceed to the survey.

Q1 **Do you agree to take part in this survey?**

- ○ Yes (1)
- ○ No (2)

Skip To: End of Survey If Do you agree to take part in this survey? = No

Completion of this survey gives you a chance to enter a draw to win one of ten $100 cash prizes.

Q2 **How old are you?**

- ○ 17 years or younger (1)
- ○ 18-20 years (2)
- ○ 21-24 years (3)
- ○ 25-29 years (4)
- ○ 30-34 years (5)
- ○ 35-39 years (6)
- ○ 40-44 years (7)
- ○ 45 years or older (8)

End of Block: Default Question Block

Start of Block: DEMOGRAPHICS

Q3 **What is your gender?**

- ○ Male (1)
- ○ Female (2)
- ○ Other (3)
- ○ Prefer not to say (4)

Q4 **Which ethnic group or groups do you belong to? PLEASE SELECT ALL THAT APPLY**

- ☐ New Zealand European (1)
- ☐ Māori (2)
- ☐ Samoan (3)
- ☐ Cook Island Māori (4)
- ☐ Tongan (5)
- ☐ Niuean (6)
- ☐ Chinese (7)
- ☐ Indian (8)
- ☐ Other (9)

Q5 **In which country were you born?**

- ○ New Zealand (1)
- ○ Australia (2)
- ○ Other (3)

Q6 **How many years have you lived in New Zealand?**

- ○ Less than 1 year (1)
- ○ 1-5 years (2)
- ○ 6-10 years (3)
- ○ More than 10 years (4)

Q7 **Where are you currently studying (full-time, part-time or through distance learning)? PLEASE SELECT ALL THAT APPLY**

- ☐ Auckland University of Technology (1)
- ☐ Lincoln University (2)
- ☐ Massey University (3)
- ☐ University of Auckland (4)
- ☐ University of Canterbury (5)
- ☐ University of Otago (6)
- ☐ University of Waikato (7)
- ☐ Victoria University of Wellington (8)
- ☐ Other **Please state** (9) _____

End of Block: DEMOGRAPHICS

Start of Block: TOBACCO USE

Q8 **Have you ever smoked cigarettes or tobacco at all, even just a few puffs?**

- ○ Yes (1)
- ○ No (2)

Skip To: Q18 If Have you ever smoked cigarettes or tobacco at all, even just a few puffs? = No

Q9 **Do you currently smoke cigarettes or tobacco? This includes roll-your-own (RYO).**

- ○ Yes (1)
- ○ No (2)

Skip To: Q18 If Do you currently smoke cigarettes or tobacco? This includes roll-your-own (RYO). = No

Q10 **Which of the following best describes how often you smoke cigarettes or tobacco now?**

- ○ At least once a day (1)
- ○ At least once a week (2)
- ○ At least once a month (3)
- ○ Less often than once a month (4)

Q11 **During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?**

- ○ 1 to 5 (1)
- ○ 6 to 10 (2)
- ○ 11 to 20 (3)
- ○ 21 to 30 (4)
- ○ 31 or more (5)
- ○ Don't know (6)

Q12 **How soon after waking do you smoke your first cigarette?**

- ○ Within 5 minutes (1)
- ○ 5-30 minutes (2)
- ○ 31-60 minutes (3)
- ○ >60 minutes (4)

Q13 **How often do you smoke in the following settings...?**

	Never (1)	Almost never (2)	Sometimes (3)	Fairly often (4)	Very often (5)
In indoor spaces where smoking is banned (1)	○	○	○	○	○
In outdoor spaces where smoking is banned (2)	○	○	○	○	○

Q14 **Are you planning on giving up smoking?**

- ○ Yes, within 30 days (1)
- ○ Yes, after 30 days but within 3 months (2)
- ○ Yes, but not within the next 3 months (3)
- ○ No, I am not planning on giving up (4)

Q15 **Have you tried to quit smoking at any time in the last 12 months?**

- ○ Yes (1)
- ○ No (2)

Skip To: Q17 If Have you tried to quit smoking at any time in the last 12 months? = No

Q16 **In the last 12 months, how many serious attempts to stop smoking did you make that lasted 24 hours or longer? Please include any attempts that you are currently making.**

- ○ 1-3 (1)
- ○ 4-5 (2)
- ○ More than 5 (3)

Q17 **How would your smoking change (if at all) if the price of a packet of your regular cigarettes or RYO tobacco was increased by the amounts shown below...?**

	I would smoke the same amount that I smoke today (1)	I would smoke less than I smoke today (2)	I would switch to other tobacco products (3)	I would switch to electronic cigarette (e-cigarette) (4)	I would stop smoking cigarettes altogether (5)	Don't know (6)
$5.00 (1)	○	○	○	○	○	○
$10.00 (2)	○	○	○	○	○	○
$15.00 (3)	○	○	○	○	○	○
>$15.00 (4)	○	○	○	○	○	○

Q18 **For each of the following statements, please indicate how you agree or disagree.**

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
Being smokefree is part of the New Zealand way of life (1)	○	○	○	○	○
The number of places allowed to sell cigarettes and tobacco should be reduced (2)	○	○	○	○	○
Cigarettes should no longer be sold in New Zealand in 10 years (3)	○	○	○	○	○

End of Block: TOBACCO USE

Start of Block: E-CIGARETTES

Q19 **Electronic cigarettes, sometimes referred to as e-cigarettes, personal vaporisers or vaping devices are battery-operated devices that sometimes look like a cigarette or a fountain pen. They do not contain tobacco, but they release a mist that people inhale from the mouthpiece. Have you ever tried an e-cigarette or vaping device?**

○ Yes (1)

○ No (2)

Skip To: Q26 If Electronic cigarettes, sometimes referred to as e-cigarettes, personal vaporisers or vaping devic... = No

Q20 **How often do you currently use an e-cigarette or vaping device?**

- ○ Daily or almost daily (1)
- ○ Less than daily, but at least once a week (2)
- ○ Less than weekly, but at least once a month (3)
- ○ Less than monthly (4)
- ○ Not at all (5)
- ○ Don't know (6)

Skip To: Q22 If How often do you currently use an e-cigarette or vaping device? = Not at all

Q21 **How often do you vape/use an e-cigarette in the following settings...?**

	Never (1)	Almost never (2)	Sometimes (3)	Fairly often (4)	Very often (5)
In indoor spaces where smoking is banned (1)	○	○	○	○	○
In outdoor spaces where smoking is banned (2)	○	○	○	○	○

Q22 **What is (was) your primary reason for using an e-cigarette or vaping device?**

- ○ To quit smoking (1)
- ○ To cut down on smoking (2)
- ○ To use when I cannot or am not allowed to smoke (3)
- ○ To avoid returning to smoking (4)
- ○ Because I enjoy(ed) it (5)
- ○ Curiosity/just wanted to try them (6)
- ○ To save money compared to purchasing cigarettes (7)
- ○ Some other reason (8)
- ○ Don't know (9)

Q23 **Have you used an e-cigarette or vaping device daily for a month or more?**

- ○ Yes (1)
- ○ No (2)

Skip To: Q26 If Have you used an e-cigarette or vaping device daily for a month or more? = No

Q24 **Does the e-cigarette or vaping device that you use(d) most often contain(ed) nicotine?**

- ○ Yes (1)
- ○ No (2)
- ○ Don't know (3)

Q25 **What e-cigarette or vaping device (do/did) you use (the most)?**

- ○ A disposable e-cigarette or vaping device (non-rechargeable) (1)
- ○ An e-cigarette or vaping device that uses replaceable prefilled cartridges (rechargeable) (2)
- ○ An e-cigarette or vaping device with a tank that you refill with liquids (rechargeable) (3)
- ○ A modular system that you refill with liquids (you use your own combination of separate devices: batteries, atomisers, etc.) (rechargeable) (4)
- ○ Don't know (5)

Q26 **Compared with tobacco cigarettes, how harmful are e-cigarettes to a person's health?**

- ○ Much less harmful than cigarettes (1)
- ○ Somewhat less harmful than cigarettes (2)
- ○ About the same as cigarettes (3)
- ○ Somewhat more harmful than cigarettes (4)
- ○ Much more harmful than cigarettes (5)
- ○ Don't know (6)

Q27 **For each of the following statements, please indicate how much you agree or disagree.**

	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
If someone vapes around me they are causing me harm because of second-hand vapour (1)	○	○	○	○	○
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed (2)	○	○	○	○	○
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed (3)	○	○	○	○	○

End of Block: E-CIGARETTES

Start of Block: SMOKEFREE 2025 GOAL

Q28 **The New Zealand Government wants to reduce the proportion of people who smoke from around 16% (1 in 6) currently to less than 5% (1 in 20) by 2025. This is the Smokefree 2025 Goal. Before today, were you aware of this goal?**

- ○ Yes (1)
- ○ No (2)

Q29 **Please select one response for each question on <u>Smokefree 2025 Goal</u> below.**

	Definitely yes (1)	Somewhat yes (2)	Not really (3)	Definitely not (4)	No opinion (5)
Do you support this goal? (1)	○	○	○	○	○
Do you think this goal can be achieved? (2)	○	○	○	○	○
Do you think e-cigarettes/vaping can help achieve this goal? (3)	○	○	○	○	○

End of Block: SMOKEFREE 2025 GOAL

Start of Block: GENERAL QUESTIONS

Q30 **The following questions ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate HOW OFTEN you felt or thought a certain way.**

	Never (1)	Almost never (2)	Sometimes (3)	Fairly often (4)	Very often (5)
In the last month, how often have you felt that you were unable to control the important things in your life? (1)	○	○	○	○	○
In the last month, how often have you felt confident about your ability to handle your personal problems? (2)	○	○	○	○	○
In the last month, how often have you felt that things were going your way? (3)	○	○	○	○	○
In the last month, how often have you felt difficulties were pilling up so high that you could not overcome them? (4)	○	○	○	○	○

Q31 **Have you been diagnosed with or received treatment for any of the following medical conditions in the last 12 months? PLEASE SELECT ALL THAT APPLY.**

- ☐ Depression (1)
- ☐ Anxiety or nervous disorder (2)
- ☐ Other mental health condition (3)
- ☐ Cancer, other than skin cancer (4)
- ☐ Cardiovascular disease (e.g. heart disease, high blood pressure) (5)
- ☐ Asthma (6)
- ☐ Other chronic respiratory disease (e.g. chronic obstructive pulmonary disease) (7)
- ☐ Diabetes (8)
- ☐ None of the above (9)

End of Block: GENERAL QUESTIONS

Start of Block: FOLLOW-UP

32 **Would you like to be entered into the draw to win one of ten $100 cash prizes?**

- ○ Yes (**Please provide your contact details at the end of this survey**) (1)
- ○ No (2)

Q33 **Would you like to receive a copy of the results of this survey?**

- ○ Yes (**Please provide your contact details at the end of this survey**) (1)
- ○ No (2)

Q39 **Would you like to receive information about future research on this topic?**

- ○ Yes (**Please provide your contact details below**) (1)
- ○ No (2)

Q34 **Please write your first name and phone number or email below to help us contact you.**

_____

Q35 **Thank you for taking time to complete this survey. Please feel free to ask your friend(s) studying at a New Zealand university to participate as well.**

End of Block: FOLLOW-UP

Appendix 11. The questionnaire – UQ component

Please tick one of the following boxes:

- ☐ UQ student (go to question 1)
- ☐ UQ staff member (go to question 5)
- ☐ Both a UQ student and a UQ staff member (go to question 1)
- ☐ Neither a UQ student or UQ staff member

STUDENT SURVEY

1. **What is your student status?**

   ☐ **Domestic**
   ☐ **International**

2. **What degree are you enrolled in?**

   Please specify_____

3. **Which UQ campus do you attend regularly? (tick as many as apply)**

   ☐ **St Lucia**
   ☐ **Herston**
   ☐ **Gatton**
   ☐ **External only**
   ☐ **Other:**_____

4. **Do you live in a student residence on a UQ campus?**

   ☐ **Yes**
   ☐ **No**

STAFF SURVEY

5. **What is your role at UQ?**

   ☐ **Security Personnel**
   ☐ **Property and Facilities Personnel**
   ☐ **Research Professional Staff Member**
   ☐ **Professional Staff Member**
   ☐ **Academic Staff Member**
   ☐ **Other, please specify**_____

6. **How many years have you worked at UQ?**

   ☐ **0-2 years** ☐ **3-5 years** ☐ **6+ years**

_____

7. Which UQ campus do you attend regularly? (tick as many as apply)

☐ St Lucia
☐ Herston
☐ Gatton
☐ External only
☐ Other:_____

DEMOGRAPHICS

The purpose of this section is to collect some general information about you.

8. How old are you? (in years)

☐ <18
☐ 18-24
☐ 25-29
☐ 30-34
☐ 35-39
☐ 40-44
☐ 45-49
☐ 50 and over

9. What is your gender?

PLEASE TICK ONE BOX ONLY

☐ Male
☐ Female
☐ X (Indeterminate, Intersex, Unspecified)
☐ Other

10. Which ethnic group or groups do you belong to?
PLEASE TICK ALL THAT APPLY

☐ Australian Aboriginal
☐ Torres Strait Islander
☐ Australian European
☐ New Zealand European
☐ New Zealand Māori
☐ Pacific Islander
☐ Other
☐ Don't know

11. **In which country were you born (tick one that applies)?** PLEASE TICK ONE BOX ONLY

☐ Australia
☐ New Zealand
☐ Other, Please specify_____

12. If not born in Australia, how many years have you lived in Australia (tick one that applies)

☐ 0-12 months
☐ 1-5 years
☐ 6-10 years
☐ More than 10 years

TOBACCO USE

This section asks you some questions on smoking cigarettes and tobacco.

13. Have you ever smoked cigarettes or tobacco at all, even just a few puffs?
PLEASE TICK ONE BOX ONLY

☐ Yes
☐ No (**go to question 22**)

14. Do you currently smoke cigarettes or tobacco? This includes roll-your-own (RYO).
PLEASE TICK ONE BOX ONLY

☐ Yes
☐ No (**go to question 20**)

15. Which of the following best describes how often you smoke cigarettes or tobacco now?
PLEASE TICK ONE BOX ONLY

☐ At least once a day
☐ At least once a week
☐ At least once a month
☐ Less often than once a month

16. How soon after waking do you smoke your first cigarette?
PLEASE TICK ONE BOX ONLY

☐ Within 5 minutes
☐ 5-30 minutes
☐ 31-60 minutes
☐ >60 minutes

17. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?

PLEASE TICK ONE BOX ONLY

- ☐ 1 to 5
- ☐ 6 to 10
- ☐ 11 to 20
- ☐ 21 to 30
- ☐ 31 or more
- ☐ Don't know

18. How often do you smoke in the following settings....

	Never	Almost Never	Some-times	Fairly Often	Very Often
A. In indoor spaces where smoking is banned					
B. In outdoor spaces where smoking is banned					
C. Within a UQ campus, including outdoor locations					

19. Are you planning on giving up smoking?

- ☐ Yes, within 30 days
- ☐ Yes, after 30 days but within 3 months
- ☐ Yes, but not within the next 3 months
- ☐ No, I am not planning on giving up.

20. Have you tried to quit smoking at any time in the last 12 months?

- ☐ Yes
- ☐ No (**go to question 22**)

21. In the last 12 months, how many serious attempts to stop smoking did you make that lasted 24 hours or longer? Please include any attempt that you are currently making.

PLEASE TICK ONE BOX ONLY

- ☐ 1-3
- ☐ 4-5
- ☐ More than 5

E-CIGARETTES

Electronic cigarettes, sometimes referred to as e-cigarettes or vaping devices are battery-operated devices that sometimes look like a cigarette or a fountain pen. They do not contain tobacco, but they release a mist that people inhale from the mouthpiece.

22. Have you ever tried an e-cigarette or vaping device?
PLEASE TICK ONE BOX ONLY

- ☐ Yes
- ☐ No (**go to question 29**)
- ☐ Don't know

23. How often do you currently use an e-cigarette or vaping device?
PLEASE TICK ONE BOX ONLY

- ☐ Daily or almost daily
- ☐ Less than daily, but at least once a week
- ☐ Less than weekly, but at least once a month
- ☐ Less than monthly
- ☐ Not at all **(go to question 25)**
- ☐ Don't know

24. How often do you vape/use an e-cigarette in the following settings....

	Never	Almost Never	Some-times	Fairly Often	Very Often
A. In indoor spaces where smoking is not allowed					
B. In outdoor spaces where smoking is not allowed					
C. Within a UQ campus, including outdoor locations					

25. What is (was) your primary reason for using an e-cigarette or vaping device?
PLEASE TICK ONE BOX ONLY

- ☐ To quit smoking
- ☐ To cut down smoking
- ☐ To use when I cannot or am not allowed to smoke
- ☐ To avoid returning to smoking
- ☐ Because I enjoy(ed) it
- ☐ Curiosity/just wanted to try them
- ☐ To save money compared to purchasing cigarettes
- ☐ Some other reason (**please specify**.....)
- ☐ Don't know

26. Have you used an e-cigarette or vaping device daily for a month or more?
PLEASE TICK ONE BOX ONLY

- ☐ Yes
- ☐ No
- ☐ Don't know

27. Does the e-cigarette or vaping device that you use(d) most often contain nicotine?

PLEASE TICK ONE BOX ONLY

- ☐ Yes
- ☐ No
- ☐ Don't know

28. What e-cigarette or vaping device (do/did) you use (the most)?

- ☐ A disposable e-cigarette or vaping device (non-rechargeable)
- ☐ An e-cigarette or vaping device that uses replaceable prefilled cartridges (rechargeable)
- ☐ An e-cigarette or vaping device with a tank that you refill with liquids (rechargeable)
- ☐ A modular system that you refill with liquids (you use your own combination of separate devices: batteries, atomisers etc) (rechargeable)
- ☐ Don't know

29. Compared with cigarettes, how harmful are e-cigarettes to a person's health?

PLEASE TICK ONE BOX ONLY

- ☐ Much less harmful than cigarettes
- ☐ Somewhat less harmful than cigarettes
- ☐ About the same as cigarettes
- ☐ Somewhat more harmful than cigarettes
- ☐ Much more harmful than cigarettes
- ☐ Don't know

SMOKE-FREE POLICIES

30. In which of the following locations is smoking NOT allowed on UQ campuses? (tick all that apply)

- ☐ Anywhere within the campus including 5 metres from the boundary
- ☐ Anywhere on campus excluding residential colleges
- ☐ All indoor spaces
- ☐ Anywhere that is not a designated outdoor smoking area
- ☐ Within 5 metres of bus stops, taxi ranks, and ferry terminals
- ☐ Within 5 metres of childcare facilities
- ☐ Within 5 metres of a building that contains hazardous materials
- ☐ Within outdoor pedestrian malls
- ☐ Within 5 metres of a bicycle storage facility
- ☐ Within 5 metres of a building entrance
- ☐ Within 5 metres of a child
- ☐ In commercial outdoor eating or drinking areas
- ☐ Within 5 metres of the UQ health service clinic

☐ On sporting fields
☐ There are no restrictions on smoking on UQ campuses

31. For each of the following statements, please indicate how much you agree or disagree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
A. If someone smokes cigarettes around me they are causing me harm because of second-hand smoke.					
B. Ifsomeonevapes(usesan e-cigarette) around me they are causing me harm because of second-hand vapour					
C. I prefer to be in a smoke- free environment.					
D. I would feel comfortable asking others to comply with a smoke free policy					
E. I ask others not to smoke around me.					
F. Outdoor smoking bans are a breach of personal freedom					
G. Smoke free campus policies will be difficult to enforce without penalties					
H. Allowing smoking on campus is unfair to non- smokers					
I. All indoor worksites should be smoke-free, including bars and restaurants.					
J. Our campus should be smoke-free including all outdoor areas.					
K. People should be allowed to use e-cigarettes in indoor places where smoking is not allowed.					
L. People should be allowed to use e-cigarettes in outdoor places where smoking is not allowed.					
M. Restrictions on where you can smoke outdoors are unfair on smokers.					
N. There should be some places at UQ where people can go to smoke.					
O. There should be more help or support at UQ for people who want to quit smoking.					
P. Because of their professional role, UQ staff have a responsibility to be non-smokers.					

Q. The number of places allowed to sell cigarettes and tobacco should be reduced.					
R. Cigarettes and tobacco should not be sold in Australia in 10 years' time.					
The following are asked only of current smokers					
S. I would not smoke in an outdoor smoke-free area if I was asked not to by a student					
T. I would not smoke in an outdoor smoke-free area if I was asked not to by UQ security personnel					
U. I would not smoke in an outdoor smoke-free area if asked not to by a general UQ staff member (non- security personnel)					

32. What effect, if any, do you think a completely smoke-free university campus policy would have on ... (for each statement circle which most closely corresponds to your opinion)

	Extremely negative	Negative	Neither negative nor positive	Positive	Extremely positive
A. Staff quality of life					
B. Student quality of life					
C. Student enrolment					
D. The quality of the environment on campus					

33. Who should be responsible for smoke-free policy compliance on UQ campuses?

	Strongly Disagree	Disagree	Neutral/no opinion	Agree	Strongly agree
A. Everyone					
B. Theindividual smoker					
C. Universitysecurity personnel					
D. All university staff					
E. Government enforcement officers, such as police					

34. How should compliance with smoke-free policies on UQ campuses be encouraged? (tick all that apply)

- ☐ Verbal reminder for non-compliance
- ☐ Signage
- ☐ Monetary fine for non-compliance
- ☐ Disciplinary process for students/staff for non-compliance
- ☐ Mandatory online training for staff and students on smoking policies and health
- ☐ No action
- ☐ Other, please specify _____

35. Please use this space to tell us anything you want to about smoking on UQ campuses and your thoughts on whether UQ should become a 100% smoke-free university.

_____

The final questions are about your current feelings and well-being

36. The following questions ask you about your feelings and thoughts during THE LAST MONTH. In each case, please indicate HOW OFTEN you felt or thought a certain way.

	Never	Almost Never	Some-times	Fairly Often	Very Often
A. In the last month, how often have you felt that you were unable to control the important things in your life?					
B. In the last month, how often have you felt confident about your ability to handle your personal problems?					
C. In the last month, how often have you felt that things were going your way?					
D. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

IF STAFF DISPLAY THE FOLLOWING UNDER QUESTION 36

Note: If these questions have raised any concerns for you about your current feelings, support is available via http://www.hr.uq.edu.au/mental-health-toolkit

IF STUDENT DISPLAY THE FOLLOWING UNDER QUESTION 36

Note: If any of these questions have raised any concerns for you about your current feelings, counselling is available via student services http://www.uq.edu.au/student-services/counselling-services

37. Have you been diagnosed with or received treatment for any of the following medical conditions in the last 12 months? (tick all that apply)

- ☐ Depression
- ☐ Anxiety or nervous disorder
- ☐ Other mental health condition
- ☐ Cancer, other than skin cancer
- ☐ Cardiovascular disease (e.g. heart disease, high blood pressure)
- ☐ Asthma
- ☐ Other chronic respiratory conditions (e.g. Chronic obstructive pulmonary disease)
- ☐ Diabetes

Finally, please click here to submit your survey responses.

Appendix 12. Core questions used in New Zealand and Australia

CORE QUESTIONS: For Australia and New Zealand surveys

TOBACCO USE

This section asks you some questions on smoking cigarettes and tobacco.

1. **Have you ever smoked cigarettes or tobacco at all, even just a few puffs?**
   - ☐ Yes
   - ☐ No

2. **Do you currently smoke cigarettes or tobacco? This includes roll-your-own (RYO).**
   - ☐ Yes
   - ☐ No (**go to question 5**)

3. **Which of the following best describes how often you smoke cigarettes or tobacco now?**
   - ☐ At least once a day
   - ☐ At least once a week
   - ☐ At least once a month
   - ☐ Less often than once a month

4. **During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?**
   - ☐ 1 to 5
   - ☐ 6 to 10
   - ☐ 11 to 20
   - ☐ 21 to 30
   - ☐ 31 or more
   - ☐ Don't know

5. **How soon after waking up do you smoke your first cigarette?**
   - ☐ Within 5 minutes
   - ☐ 5-30 minutes
   - ☐ 31-60 minutes
   - ☐ >60 minutes

6. **How often do you smoke in the following settings…?**

	Never	Almost never	Sometimes	Fairly often	Very often
In indoor spaces where smoking is banned	○	○	○	○	○
In outdoor spaces where smoking is banned	○	○	○	○	○

7. **Are you planning on giving up smoking?**
   - ☐ Yes, within 30 days
   - ☐ Yes, after 30 days but within 3 months
   - ☐ Yes, but not within the next 3 months
   - ☐ No, I am not planning on giving up

8. **Have you tried to quit smoking at any time in the last 12 months?**

   ☐ Yes ☐ No

9. **In the last 12 months, how many serious attempts to stop smoking did you make that lasted 24 hours or longer? Please include any attempt that you are currently making.**
   - ☐ 1-3
   - ☐ 4-5
   - ☐ More than 5

10. **For each of the following statement, please indicate how you agree or disagree (AUSTRALIAN COMPONENT).**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	No opinion
I prefer to be in a smoke-free environment	○	○	○	○	○	○
The number of places allowed to sell cigarettes and tobacco should be reduced	○	○	○	○	○	○
Cigarettes should not be sold in Australia in 10 years	○	○	○	○	○	○

11. **For each of the following statement, please indicate how you agree or disagree (NEW ZEALAND COMPONENT).**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	No opinion
Being smokefree is part of the New Zealand way of life	○	○	○	○	○	○
The number of places allowed to sell cigarettes and tobacco should be reduced	○	○	○	○	○	○
Cigarettes should not be sold in New Zealand in 10 years	○	○	○	○	○	○

E-CIGARETTE USE

12. Electronic cigarettes, sometimes referred to as e-cigarettes, personal vaporisers or vaping devices are battery-operated devices that sometimes look like a cigarette or a fountain pen. They do not contain tobacco, but they release a mist that people inhale from the mouthpiece. Have you ever tried an e-cigarette or vaping device?

- ☐ Yes
- ☐ No

13. How often do you currently use an e-cigarette or vaping device?

- ☐ Daily or almost daily
- ☐ Less than daily, but at least once a week
- ☐ Less than weekly, but at least once a month
- ☐ Less than monthly
- ☐ Not at all
- ☐ Don't know

14. How often do you vape/use an e-cigarette in the following settings...?

	Never	Almost never	Sometimes	Fairly often	Very often
In indoor spaces where smoking is banned	○	○	○	○	○
In outdoor spaces where smoking is banned	○	○	○	○	○

15. What is (was) your primary reason for using an e-cigarette or vaping device?

- ☐ To quit smoking
- ☐ To cut down on smoking
- ☐ To use when I cannot or am not allowed to smoke
- ☐ To avoid returning to smoking
- ☐ Because I enjoy(ed) it
- ☐ Curiosity/just wanted to try them
- ☐ To save money compared to purchasing cigarettes
- ☐ Some other reason
- ☐ Don't know

16. Have you used an e-cigarette or vaping device daily for a month or more?

- ☐ Yes
- ☐ No

17. Does the e-cigarette or vaping device that you use(d) most often contain(ed) nicotine?

- ☐ Yes
- ☐ No
- ☐ Don't know

18. Compared with cigarettes, how harmful are e-cigarettes to a person's health?

- ☐ Much less harmful than cigarettes
- ☐ Somewhat less harmful than cigarettes
- ☐ About the same as cigarettes
- ☐ Somewhat more harmful than cigarettes
- ☐ Much more harmful than cigarettes
- ☐ Don't know

19. For each of the following statements, please indicate how much you agree or disagree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
If someone vapes around me they are causing me harm because of second-hand vapour	○	○	○	○	○
People should be allowed to vape/use e-cigarettes in indoor places where smoking is not allowed	○	○	○	○	○
People should be allowed to vape/use e-cigarettes in outdoor places where smoking is not allowed	○	○	○	○	○

Appendix 13. The University of Canterbury Human Ethics Committee approval for the New Zealand component.

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2017/42/LR-PS

15 August 2017

Ben Musumba Wamamili
Health Sciences
UNIVERSITY OF CANTERBURY

Dear Ben

Thank you for submitting your low risk application to the Human Ethics Committee for the research proposal titled "Assessing Prevalence of Use and Perceptions of University Students in NZ on Vaping, Cigarette Smoking and the Smokefree 2025 Goal".

I am pleased to advise that this application has been reviewed and approved.

With best wishes for your project.

Yours sincerely

R. Robinson

pp.

Associate Professor Jane Maidment
Chair, Human Ethics Committee

Appendix 14. The University of Queensland School of Public Health Research Ethics Committee approval for the Australian component.

School of Public Health

THE UNIVERSITY OF QUEENSLAND

Public Health Building
Herston Road, Herston
Brisbane Qld 4006
Website www.sph.uq.edu.au

To Mentari Widiastuti
From Luke Knibbs
Date 24/7/17
Re Ethics approval MW1723

Dear Mentari

Thank you for your application for ethics approval for your research.

The SAVE (Smoking And Vaping in Educational settings) Project

The School of Public Health Research Ethics Committee has reviewed the materials submitted for review and I am pleased to inform you that your ethics application is approved.

Yours faithfully

Luke Knibbs
(Acting) Chair, School of Public Health Research Ethics Committee
School of Public Health, University of Queensland

Appendix 15. The Māori (Ngāi Tahu) Consultation and Engagement Group approval for the New Zealand component.

Ngāi Tahu Consultation and Engagement Group

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

09/10/2017

Tēnā koe, Ben

RE: Assessing Prevalence of Use and Perceptions of University Students in NZ on Vaping, Cigarette Smoking and the Smokefree 2025 Goal

This letter is written on behalf of the Ngāi Tahu Consultation and Engagement Group. I/We have read and considered your proposal and acknowledge that this is a worthwhile and very interesting project there have been no issues identified.

It is well considered and the researcher is clear about how they ought to take participants' (cultural) needs into account if and when applicable.

Thank you for engaging with the Māori consultation process. This will strengthen your research proposal, support the University's Strategy for Māori Development, and increase the likelihood of success with external engagement. It will also increase the likelihood that the outcomes of your research will be of benefit to Māori communities. We wish you all the best with your current project and look forward to hearing about future research plans.

The Ngāi Tahu Consultation and Engagement Group would appreciate a summary of your findings on completion of the current project. Please feel free to contact me if you have any questions.

Ngā mihi
Nigel Harris

NAT Harris

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